

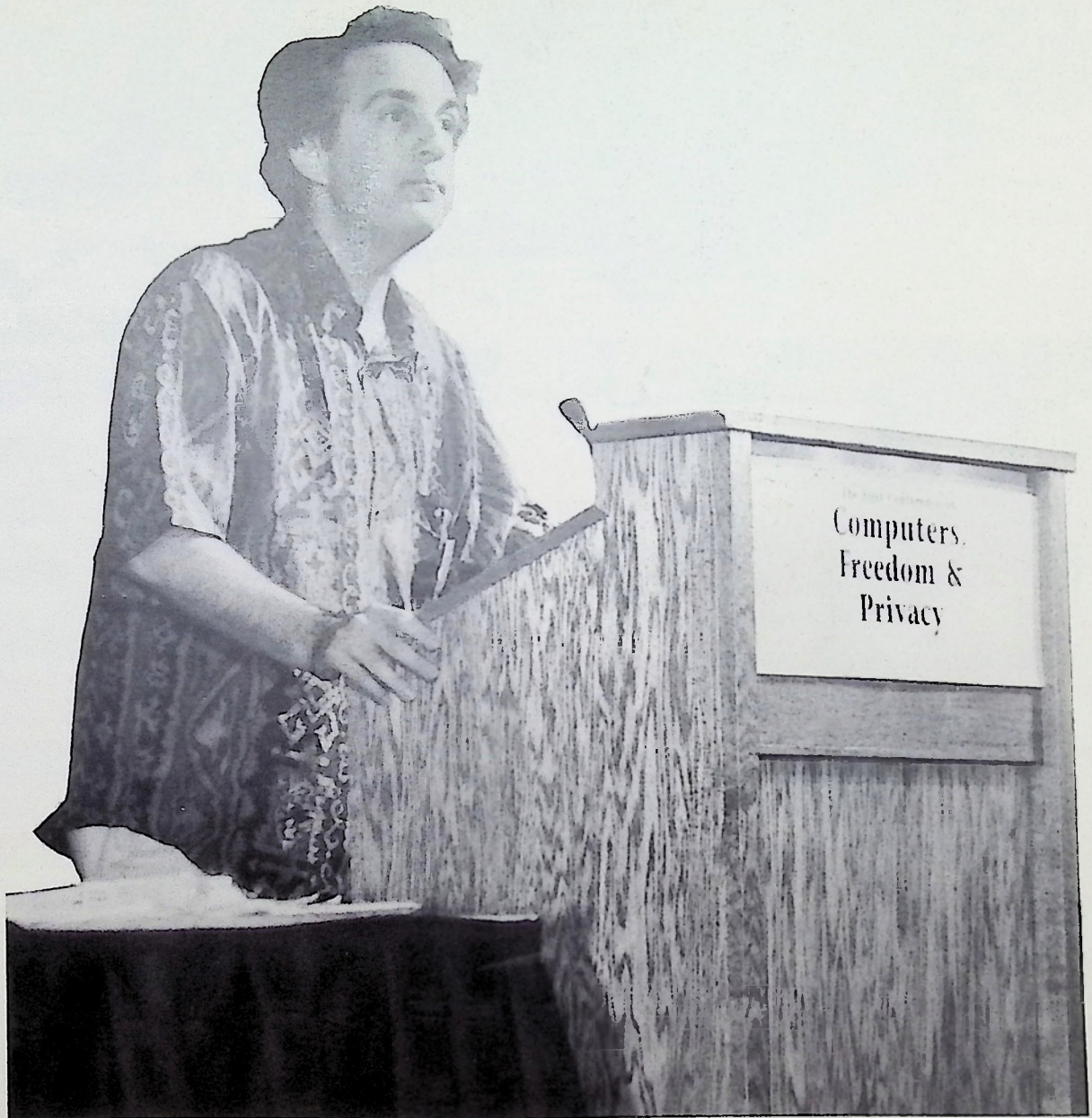
May, 1991

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BOARDWATCH

MAGAZINE

Electronic BBS and Online Information Services



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First Conference on Computers, Freedom, and Privacy**

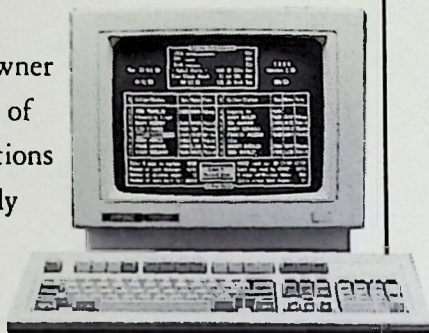


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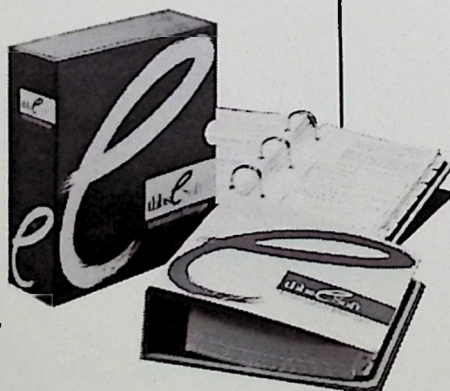
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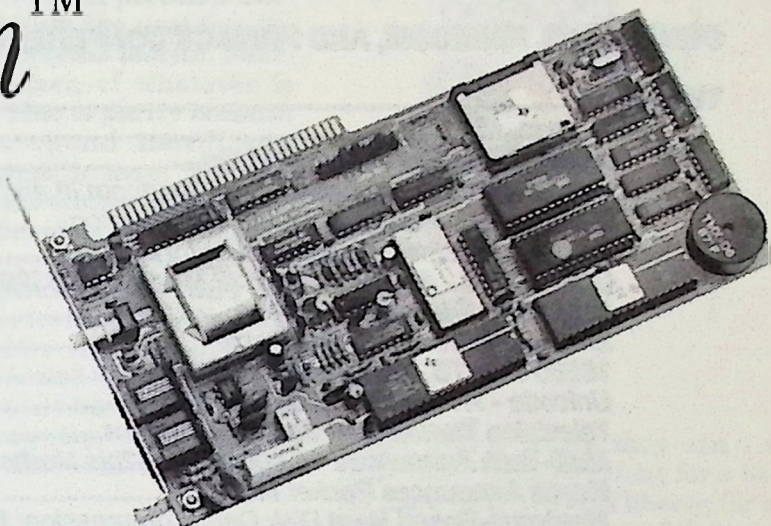
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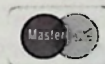
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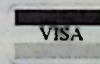
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EDITOR'S NOTES

The early science fiction writers probably did more to form our initial collective view of computers than any other group. Their original wordscape painted a bleak picture of large, monolithic computers controlled by governments and those wealthy and powerful enough to afford them. In most scenarios, they served as an all too efficient tool for controlling individuals at the expense of their personal liberties. The basic theme seemed to be that personal freedom was the byproduct of government's inability to artfully track the comings and goings of millions of people. The computer would eliminate this little problem and personal liberty with it.

The past decade has seen an enormously powerful and encouraging trend toward a kinder, gentler computer. The growth from zero to 60 million desktop computers in about 15 years will come to be regarded as a "revolution" of some sort. The PC became the tool of every man, while the Internal Revenue Service and the Social Security Administration have floundered pathetically for decades trying to upgrade their monoliths. In many areas of the world, desktop PCs and their communications capabilities have been a force for liberation - not tyranny.

But as PCs begin to link up through increasingly effective communications techniques, the dark side of computing is emerging again. Within corporations, the decimated minions of corporate computer control are gaining new life through Local Area Networks. The PCs are connected, and then the edicts begin. Standardized software, standardized peripherals. And then, because of the hazard posed by virus attacks (everyone does recognize this grave threat don't they?), no outside or personal software. To make us safe, the last vestige of "personal" in PCs in the corporate world is forfeited. The PC becomes a kind

of overpowered terminal on the now "downsized" corporate mainframe. They were unsuccessful in killing or banning PCs, so they connected them to reinvent the monolith.

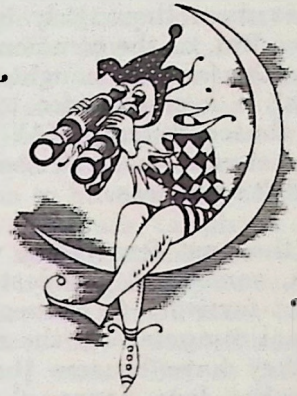
It is true that Americans are basically jealous of their personal freedoms. But within the past few decades, we've become fearful. Fearful of each other, of whatever is "out there". This is partly because most of us spend inordinate amounts of time "in here." There is little life on the streets of America. We don't sell each other barbecued pork on the streets, roast corn, vegetables, or peanuts. We don't socialize in the streets at all. We once asked a relative who had just arrived in the United States from the Philippines what her first impression of the country was. "There's nobody outside!" was the instant reply.

Look out your door. The streets are deserted - particularly in the 'burbs but even downtown. You see people in cars. An occasional delivery man perhaps. But basically, there's nobody outside. We huddle indoors glued to a television that reminds us hourly how dangerous all our neighbors are. We'll be robbed, raped, shot, and sued if we venture out of doors by the drug-crazed, the Satanic, or the desperate.

And we've developed a societal tendency to blink stupidly into space whenever we're asked to forfeit any personal liberty in the interests of safety. The conflict inherent in the question is paralyzing. Your liberty or your life. But it's the devil's trade of this quarter century. Give me your soul and I will make you safe. We are afraid. We want safety. Just give up a little personal freedom? It's not too much to ask. These are dangerous times. But no matter what we give up, we don't become safer.

And there are those who have learned to take expert advantage of this fear. They don't actually make anyone safer from anything of course. But bit by bit they gain a little more control by making

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small trades where they can - a little more illusory safety, for a little more forfeited real liberty, for a little more control. Just a few years ago, the sanctity of the family in America was unquestioned. Any intrusion by government into how a couple raised their children or into the intimate details of their marriage would have been unthinkable. Parade a few cases of abused children about on the TV screen. Interview a few battered wives. Dredge up the micropercentage of victims of the tragedy of living with other imperfect human beings and paint it as a looming threat that will consume us all. When will YOU be next. Promise safety from these family tragedies. Never mind you can't possibly deliver. Promise it and the citizenry will allow whatever laws you need to make them safe.

You may not realize that your local law enforcement officials can now enter your home and seize your children with impunity based on any suspicion, however slight, that there may have been abuse. They not only can intervene in a marital spat, but in most cases once on the scene they are mandated to arrest someone before they leave - to prevent violence in the home. Here in Colorado, a local TV station recently did a story on a social worker who had been given an unconscionable amount of power over

the lives of families in her area and had quite predictably eventually abused it to the point of making the evening news. Wrecked several families most thoroughly in the process. But, as the commentator noted, a few families "caught in the system" is a small price to pay when abused children MAY be at stake. Let us be above all else safe. I couldn't agree less.

Over the past few years, we've begun, somewhat clandestinely but not furtively, to connect our personal computers in the night, and they have become thereby somewhat less personal. The emerging online counter-culture has formed a tempting target for the bureaucrats and safety Nazis who seek to control. At the Computers, Freedom, and Privacy Conference held in San Francisco this past March, several came forth to explain the importance of bashing in doors, seizing computer equipment, and arresting individuals for such heinous crimes as having their computer dial another in the night with wrongful intent - or listing credit card numbers online. In most cases, the actual dialing hadn't even occurred. Steve Jackson had his business wrecked because Secret Service agents suspected one of his employees of KNOWING someone who might belong to a group that advocated computer intrusion. Ever hear of right to peaceable assembly? The "legal search warrant" did not detail any of the who, what, or why of their search of his business, and indeed they did not search it at all. They seized anything looking remotely computer like and hauled it away in a truck to search at their own convenience.

Craig Niedorf was brought to the bar for publishing a document deemed dangerous. It contained some information on E911 services. Like who runs them. Who provides training. Administrative drivel. Valued by the telephone company at over \$70,000. Also available for \$13 - from the same telephone company. His tiny publishing operation was seized, searched, and shut down. Even though the prosecution was forced

to drop the case, they did manage to convince Niedorf never to publish again. The estimated \$100,000 in legal expenses may have had something to do with that. And according to Sheldon Zenner, the lawyer representing Niedorf, without the direct intervention of the Electronic Frontier Foundation, Niedorf would be looking at two years in jail.

More recently, a computer system was seized for dialing another BBS three times in succession. The medical professional who ran the system called out the dogs after repeated "attacks" on his system by callers trying to "hack" into his private system. Calls were traced and one unlucky individual was tapped for his equipment. Oh, yes, here too there were a few mitigating factors. The telephone number had belonged to ANOTHER very popular BBS system a couple of weeks before. After it went down, the telephone company reassigned the number to the medical system. It had NO logon information or identifying banner for "security reasons." The "hackers" were simply people with the original BBS number in their dialing directories, who wrongly assumed the sysop had simply redesigned the system or changed software and they would have to go through the logon process again.

While rape is rising at alarming rates and drug use in America reaches epidemic proportions, two Atlanta youths are spending 14 months behind bars for entering and damaging a BellSouth computer. The damage was apparently not so great as to cause their detection in over a year of regular system access. And they were fined \$233,000 in restitution needed by BellSouth to make their computers secure from such intrusions in the future. Yes, the intruders were fined to fund the locks that should have been on the door in the first place. The prosecutors in this case are enormously proud of what they've done.

In defending these actions, all legal representatives at the Computer Freedom and Privacy Con-

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ference repeated two basic themes. One is that we are all in terrible danger and if we will just waive our rights to a free press, freedom of speech, and freedom of peaceable assembly, THEY can make us safe. Safe from software copyright infringement. Safe from telephone intrusion. Safe from having our PBX hacked. Safe in our intellectual property. Safe from having our credit card companies defrauded.

Two, it is terribly inconvenient for our legal system to afford the normal protections of constitutional law given the current state of technology. We actually had one legal eagle describe how the rules of evidence pretty much precluded his observance of constitutional rights. The courts won't let him submit a tape backup of data as evidence so the entire computer must be seized - even to investigate a single e-mail message by a single caller. Another noted that the "presumption of innocence until proven guilty is a popular fallacy." It was amazing to see how disposable these people view our liberties when it comes to their own convenience in prosecuting "crime."

One of the nation's leading constitutional law scholars, Dr. Laurence Tribe, proposed an amendment to the Constitution. Not being an accomplished legal scholar, I can't say that I understood all his points in their full nuance. But the gist of it seemed to be that we'll pass another amendment avowing that the original Constitution and all the previous amendments still apply today - just like they did before. Good. I like that. Maybe we should vote on the whole thing over again?

The disturbing thing about the Computers, Freedom, and Privacy Conference was that most of the representatives of our justice system seemed to acknowledge that they may not have had a good sense of scale, but they were sincerely trying to make someone safe in the process. That they did not yet have a grasp of what our real fears were was obvious. When they get smart enough to put together a better "show" of gruesome examples of individuals REALLY damaged by the tragedy of living in an electronic society with other human beings, they'll be back to parade them before us. When they do, the question we will have to ask ourselves is what price safety? And what price freedom?

I've not been overly fond of the idea of organizing the BBS world. For one thing, my own sock drawer is a holy wreck so where would I get the holier than thou idea the BBS world should be "organized." Secondly, I believe it is a truism of our little world that if all the BBS operators on the planet were laid end to end, they couldn't reach a consensus on lunchtime - much less anything important. No effort to organize the BBS world into anything other than a loose set of technical standards has been even modestly successful. And I LIKE the confusion, the diversity, the anarchic freedom and individuality of the online world. I don't really WANT a corporation representing me to any great degree.

Further, there is something of an uneasy view among BBS operators about online ne'er do wells. Who

among us has not had a problem caller we wished we could send away with a simple telephone call to the legal authorities? There actually is not a strong "defend the hacker" constituency among BBS operators. And the examples cited in the early stages of "settling the frontier" are not likely to be heroic martyr types. They are more likely to be the socially maladjusted who IS up to no good, to the extent that can be accomplished online. Most system operators drive Chevies, have a wife and two kids, and a mortgage slightly higher than they can afford. They view themselves as law abiding and have an inclination to support law enforcement on most matters.

The problem is that Marshall Dillon is riding into town and he doesn't know modems from Chester's gas pains. He views your BBS as a remarkable evidence gathering machine available for his convenience. Your rights under the Constitution of the United States are only assured through a laborious process of case law and precedent that is being set even as we speak. And it appears the precedent is shaping up to spell out "right to peaceable assembly - as long as it's not electronic. Freedom of speech - through your mouth but not through your keyboard. And the right to a free press - as long as it's printed on paper."

Carefully crafted legislation, and yes, perhaps even amendments to our Constitution may be needed. But if passed THEY have to be tested in the courts as well. There are no shortcuts, and no easy outs. When a hundred cases, or maybe a thousand, have been tried at law, the die will be cast as to how our Constitutional rights are applied in an electronic world. The test cases are NOT going to be about your heroes. They will not be necessarily heroic. They may even have done something you and I consider seriously wrong. But observe VERY carefully the process used to convict them. Whatever you allow done to them in the name of law, you establish as appropriate treatment in the future for yourselves - guilty OR innocent.

And as of this minute, all of the BBS operators in the United States, and all of the callers to those BBS systems, **don't have a single solitary voice in the process. No input at all!** In every industry that has ever been regulated, and all have to one degree or another, those plying the trade always formed some form of organization to have a voice in the process. Railroads, telephone companies, radio stations, the cable TV industry, all participate so fully in the process that in many cases, it becomes difficult to tell who's regulating whom. But at this juncture, it appears almost inevitable that the BBS world will be fully settled without the settlers ever speaking up in any type of coherent fashion.

A most unlikely champion has stepped forward and pledged his time, his financial resources which are considerable, his management skills, already proven, and his reputation, already firmly established in the computer community, for a cause he only recently discovered and that is distinctly NOT popular with many of his peers in industry. With John Perry Barlow, John Gilmore, Steve Wozniak, and Stuart Brand, he has formed an Electronic Frontier Foundation that has already made a striking difference in the future online world awaiting us. Mitch Kapor, co-founder of Lotus Development, current president of OnTechnologies, and co-founder of the Electronic Frontier Foundation, went to a very genteel, collegial conference in San Francisco like a bulldog to a tea party. And he made his position brutally clear in a short address Wednesday morning - that the bureaucrats should be held accountable for any infringement of our Constitutional rights - in the online world or any other - and that only a true dog fight would ensure that that happened. He pledged the EFF to that continuing struggle to the limits of its resources.

The remarkable thing is that before taking this tact, EFF didn't go out and count heads, take a vote, do surveys and market studies, or

try to organize everyone in Kingdom Come to reach a consensus first. Kapor saw a need, and acted on it virtually immediately. That's leadership. Leadership of a "Lead, Follow, or Get the Hell Out of the Way" style we have to admire.

So OK, we'll follow then. We view the EFF as the most likely, and the most effective voice to represent the online world before the legal system in the United States. And we would like the BBS segment of that online world to have an effect on EFF policies and positions. I DON'T want to see it become the voice of just the "big" systems, or the Unix world, or Internet, or commercial services, or just the large BBS systems for that matter. There are 32,000 BBS systems operating in the U.S. today. If half those systems operate on a subscription basis, and if every subscription supported BBS in the country sent in a contribution equivalent to ONE of their paid subscriptions, EFF would have the funding and constituency to be a very effective force in the legal battles and definitions that will very much influence the online world we'll live in.

We would urge each of you to in turn pledge your support to the Electronic Frontier Foundation and make it the organized voice of the BBS world. And we're most pleased to carry Mitch Kapor in full froth at the Computers, Freedom and Privacy conference as our cover girl this month. You can contact the Electronic Frontier Foundation with contributions or for information on how you can support their efforts at 155 Second Street, Cambridge, MA 02141; 617-864-0665 voice; 617-864-0866 fax.

LETTERS TO THE EDITOR

Dear Mr. Rickard:

I would like to comment on some recent editorials in Boardwatch.

Feb 91 - Telephone exchange names: Exchange names were kept in Philadelphia until about 1980. Many people in the city still use the exchange names. I raised this issue on my local BBS's telecom section and many people recalled, fondly as you did, their old exchange name and number. Everyone thought names like EV-ergreen and ORchard sounded better than 387 and 676 and wished we still used them.

In New Jersey and New York City, where they're running out of exchange codes, zero has already been used as the middle digit in exchange names. With the growth of FAX, modems, and Centrex, they're running out of exchange names.

Per your comment of accessible data bases containing nation-wide telephone directory information, I feel it should NOT be so readily available to the corporate world as well as to individuals. There are quite a few data bases that carry rather personal information. For example, in Philadelphia, there's a data base of "problem" apartment renters. If you end up on this system, you'll have a lot of trouble finding an apartment. But, most people don't know of this system, let alone if they're on it. Suppose you complained about poor maintenance, and your landlord "black-balls" you on this database? A person has no idea of why he has problems. Also, there's quite a few con artists who could misuse the data.

Mar 91 - Operation Desert Storm/Middle Eastern commentary: I object to your comment about "Jews going over there, carve out some real estate....". First, there has been Jewish peo-

ple in that area for thousands of years. Secondly Israel was not created to fight with the Arabs. To this day, the Arabs remain in a state of war against Israel, which started in 1948. Also, there's an economic boycott against Israel. Finally, Israel was not involved at all in the Kuwaiti-Iraqi conflict, yet Iraq chose to attack Israel anyway in an attempt to widen the war.

Per your other comments about Desert Storm, I agreed with some, disagreed with others. However, I did not subscribe to your magazine to read your opinions on general politics. I subscribe to read educated opinions and objective news stories on telecommunications and computers. I don't mind if you discuss politics, provided it pertains in some way to computers or communications, such as the FCC, statue utility regulators, etc.

Thank you.
Sincerely,

Lee R. Winson.

Lee:

On your letter, I agreed with some, disagreed with others.

The trip down memory lane on telephone exchanges is a bit embarrassing actually. I'm reminded by family members that of the two I remembered fondly in the issue you cite, I had one wrong. CORning 42286 was actually COLony 42286. Interesting to learn they lingered in Philadelphia to that late date.

The question of data bases and privacy is a thorny one and I heard a good deal on the privacy side of it at the Computers, Freedom, and Privacy conference in San Francisco this past month. I see a tremendous number of opportunities in assembling databases such as the one you describe for apartment owners. I also see a lot of problems for apartment renters. I've heard of similar databases for medical bill deadbeats, etc. I'm opposed to restricting the individuals right to collect and analyze information. Also opposed to such information being used against individuals.

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The question goes to the heart of the increasing value of information - who's got it, what it's worth, and how it can in the wrong hands be used as a weapon. But whether we like it or not, information is the name of the game in the future. Should only large corporations and government agencies be allowed to play? Do you advocate a future of "no information - it's illegal"?

While I agree that individuals can be hurt, what do you propose? I'm persuaded that neither side of this question has yet to see it in its full scope.

You object to my comment regarding those Jewish. Well, you're not alone. While I did receive a surprisingly large response to the Desert Storm editorial, it was actually enormously positive support for what I assumed would be a very unpopular point of view when I wrote it. I had managed in one thesis to take a vigorous swipe at

both the peace activists and the proponents of the war and expected the worst from all sides.

But there was a good half-dozen e-mail comments primarily from Jewish readers who took vigorous exception to my comment regarding Jews scrapping with Arabs and that did catch me completely by surprise. The comment was completely parenthetical to the editorial. In rereading it, the entire phrase could be deleted without any impact on the editorial whatsoever, and in hindsight, probably should have been. It was meant to express my personal indifference to the Jewish/Arab situation which I steadfastly retain. It was not meant as a thinly veiled anti-Jewish position - but more literally as a statement of indifference to what I view as a struggle predating 1948 considerably and without easy solutions - much after the fashion of all conflicts in the area - the only tie-in with the remaining editorial matter. The point being that I favor a

very limited role for the U.S. in the post-war region and it appears we are headed for a very active one.

However, I truly don't have any negative feelings toward those of Jewish faith, Israeli nationality, or those related, sympathetic, or opposed all around. Not that it matters even in the slightest, but what opinions I do have would tend toward admiration for a group that has clung tenaciously to a cultural and religious heritage dating back to the dispersal.

On the last, your reasons for subscribing and my reasons for writing are not, I fear, necessarily the same. In truth, it is somewhat to my chagrin that the laborious work of researching and compiling the technical matter in Boardwatch receives so little attention, while the much easier to write editorial opinion gets the lions share of reader response. But it strongly appears to be the case. More to the point, it's a ragged, opinionated little rag but it is mine. You're most likely to see anything in these pages at any time

without restriction. We've been thinking of publishing pie recipes, a board game hall of fame, and perhaps results of the dog races. I'm seriously toying with the idea of cartoons. Should it happen that someday I DO feel constrained to the limits you so arbitrarily impose, Boardwatch will release its last issue and I'll go do a rag on free-style power embroidery or some other equally fascinating area.

We're most pleased to have you as a reader along with us on an intentionally eclectic journey. And if your interests and ours diverge, there are nearly 6,000 other publications eagerly awaiting your attention - a very rich and happy banquet when you consider it. It really is a distinct and notable honor to have a few moments of your attention each month. But I will certainly understand if you find better use of your time. There are two things that are almost constantly intriguing to me: There are now at least 18,000 people who read Boardwatch Magazine in the United States each month. There are certainly 249,982,000 people who do not. And I can't honestly tell you why in either case.

Jack Rickard

Dear Jack:

In your October issue, you put Channel 1 on the front page. I noticed the BBS Callers Digest, another magazine, carried them on their front page in their April issue. In January, you had BBS software authors on the cover in Boardwatch. In the Jan/Feb BBS Callers Digest, they had a 'Who's Who in the BBS World' section. In your March issue, you reviewed Commander Keen and the same article appeared in their April issue. Even the ads look the same. Am I buying two magazines and getting one for the price? I can't wait to see their take on Toffler. Are you guys the same company or something? Keep up the good work with Boardwatch. I read it cover to cover.

Lee Richardson
L.A. California.

Lee:

Rolex is still making watches and we're still publishing Boardwatch. There are over 50,000 shareware titles on the market in the U.S. and over 30,000 BBS in operation. In the course of a year, you will likely read about less than fifty software packages and less than a hundred BBS systems - even in passing mention - within the pages of Boardwatch. My own personal frustration has nothing to do with what anyone else does in the publishing field. It has more to do with the fact that in producing a handful of pages about the BBS world each month, I feel like I'm chipping paint flakes off the hull of a ship and showing them to people who've never seen a ship, in a vain attempt to explain what a ship is, what it looks like, what makes it move through the water, what ships are for, and whether this particular ship is the Starship Enterprise or the S.S. Titanic.

We can only show a tiny splinter of the BBS world in Boardwatch. There are more excellent BBS systems that DON'T make the pages here than do, and more superb shareware packages out there we simply don't get around to reviewing than we ever possibly will. In selecting that that our readers might find interesting and useful, I am reduced to simply documenting what "I" found interesting and useful in the previous 30 days. I can't even claim that it is "representative" of the BBS world. Since the substantial part of our readership seems to be among the movers and shakers in the industry - the insiders, we will probably tend to focus more on bleeding-edge issues and leave the introductory pieces for beginners for other magazines to cover. While it strains the limits of credulity that other publisher's would occasionally chip off some of the same paint chips, it's not an issue on which to spend any time. There is still a LOT of ship hull out there yet to cover and the ship is growing faster than we can chip paint.

Boardwatch is the sole publication here. We have no affiliation with any other magazine or publisher. We do cooperate quite regularly and gladly with larger more established magazines covering the wider world of PCs in general whenever and wherever they take an interest in things online and even grant reprint rights on occasion. This was not the case with BBS Callers Digest.

I encounter BBS operators chafing at this "me too-ism" to a greater degree than publications actually. A sysop will work for weeks or months to develop a new approach, online service, or concept, only to find it on dozens of other "me too" BBS in the area within a few days. I typically advise them to look forward to the next innovation, not back at the trail of debris, and that there are gratifications to being a leader - rather than a follower. Imitation IS the sincerest form of flattery. And I suppose all of that applies to magazines as well.

Realistically, the online world needs MORE press coverage, not less. We've received dozens of calls complaining about both BBS Caller's Digest and Telecomputing Magazine. It simply isn't an issue. Both are new publications struggling for survival in a very tough industry. Let's hope they enjoy sufficient success to gain the resources and expertise to do independent, original work that contributes to the online world. Few individuals truly interested in a particular field limit themselves to "one" magazine on the topic and I myself subscribe to dozens of publications - many covering the same fields. You might find it interesting to note that Boardwatch wasn't the first publication dedicated to BBS. The real old timers may remember a newsletter titled PLUM that preceded us as well and did a pretty good - if very different - job of it. We hope the future brings many good publications to the online world, both in print and electronic form, and that each chips off a few fresh paint chips.

The bottom line is that we hope you find Boardwatch interesting, readable, and useful in your online journey, and we're exerting every effort to make sure that every issue of Boardwatch you receive is an improvement over the last. If we do that well, subscriptions, retail newsstand sales, advertising, and competition from other magazines, will all take care of themselves quite satisfactorily without much further attention.

Jack Rickard

Dear Jack Rickard,

I'd like to take this chance to congratulate you on your magazine, your fifth anniversary. I think the publication is brilliant, extremely well-written.

How good is it? I edit a newspaper myself, called the *Northwest Examiner*, a Portland news monthly, which also just turned five. I'm the computer guy there. My partner is hopeless -- I just can't get him riled up about computers. I did show him your magazine once, and he said, "Let me see that." He reads it just for your writing (which isn't too strange, because he likes mine also, and, Jack, you and I are about twins.)

Your paper is so good that there are three magazines to which I don't subscribe. After deadline, we have lunch and then I buy my three favorite magazines to read in my favorite cafe and then go home to doze off with -- Harper's, Columbia Journalism Review, and Boardwatch.

Enclosed is a copy of our Portland Computer Club newsmagazine, of which I am associate editor. I'm going to write about Boardwatch in Silicon Valley Gazette this month.

Thanks for your wonderful work.

Bob Chieger
Portland Oregon.

Bob:

It's an odd thing to consider, but I'm pleased you chose to include us in the list of magazines to which you do NOT subscribe. That's pretty fine company to be included with. We consider ourselves fortunate with the occasional comment from readers who award us a few minutes attention in the throne room. The cafe and nap sound even more delightful. Of course, we also value the less enthusiastic readers who DO subscribe.

For our reader's information, the Silicon Forest Gazette is the monthly journal of the Portland Personal Computer User's Group PPCUG. The group also runs a BBS at 503-226-4142. Membership information is available from PPCUG, 921 SW Morrison, Suite 529, Portland, OR 97205.

Thank you for the kind words.

Jack Rickard

Dear Jack:

Longtime telecommunicator here, friend and former associate of Dave Hughes in Colorado Springs. I compliment you on your achievement and continuing progress with Boardwatch.

I'd like to remind you, though, that some of your fans are California residents. We don't take kindly to this term "Californication." It may be tempting for people in other localities to believe so, but Californians are not the authors of all the nation's problems.

Further: I marched in the biggest peace demonstration here, not to look for a "cheap date" but to express deep distress about the war. I don't like being called an "air-head."

Had you been here and witnessed this march, you wouldn't be able to stereotype the tens of thousands who participated. Among them were the longhairs and black-leather types you might have expected, but the vast majority were office workers, high school baton

twirlers, PTA mothers, seniors... You might have seen people rather like yourself: responsible citizens with deep reservations about the war.

Very truly yours,

Louis Jaffe
San Francisco, CA

Louis:

Actually, at this point we have more subscribers from California than from any other single state or country. Since I got the term "Californication" from a California resident, it would appear that not all Californians speak with one voice as to what they "take to" and don't.

The leather and long hair is your characterization, not mine. I don't mind either one and have worn both at one time or another. I just don't subscribe to knee-jerk peace-at-any-price dogma so fashionable among those PTA mothers and baton-twirlers you cite. In that editorial, I expressed my opinion. Now I've even printed yours. It's a great place we live in. I just wish the Kurds and Kuwaitis had it so good.

Jack Rickard

COMPUTERS, FREEDOM, AND PRIVACY CONFERENCE

The first conference on Computers, Freedom, and Privacy was held in San Francisco March 25-28th at the SFO Airport Marriot Hotel. The conference gathered some 400 attendees from the legal community, the online world, corporate computer security experts, and privacy advocates for a rigorous series of panels on the legal issues raised by computer technology and PC communications.



Mitchell Kapor - Electronic Freedom Foundation

The conference was officially sponsored by Computer Professionals for Social Responsibility but a dozen other organizations were listed as co-sponsors as well including IEEE Engineers USA, ACM, Electronic Networking Association, Videotext Industries Association, Whole Earth Lectronic Link (WELL), and the Electronic Frontier Foundation. But from what we could tell, the man behind the conference was Conference Chair Jim Warren.

Warren is best known as the founder of the West Coast Computer Faire, probably the first notable exposition for personal computers. He's also founder of Infoworld Magazine, founding editor of Dr. Dobb's Journal and the original host of PBS TV's Computer Chronicles. He currently writes a column for Microtimes, a California regional computer publication and publishes Silicon Gulch Gazette.

True to form, Warren had the conference superbly organized with discussion panels moving briskly from one topic to another all day every day. The topics covered the legal implications of computer networks, personal privacy issues, and recent prosecution of various computer crimes.

The opening conference included a proposal for an amendment to the U.S. Constitution by Laurence H. Tribe, Professor of Constitutional Law, Harvard University Law School and considered one of the nation's leading Constitutional Law scholars. His address "The Constitution in Cyberspace: Law & Liberty Beyond the Electronic Frontier", was a subject of hallway discussion for the rest of the conference.

Wednesday evening, William A. Bayse, Assistant Director of the FBI Technical Services Division, gave a presentation on the Na-

tional Crime Information Center (NCIC) service operated by the FBI for local law enforcement centers. This may well be the nation's largest BBS, although Bayse was somewhat humorless in having it depicted that way. The system serves 64,000 terminals - some by packet radio - and processes 1,003,783 average daily inquiries. It is expected to process 410 million transactions this year at an average cost of three cents each. As of March 1, 1991, it had 7,102,790 records online including over 2 million records of stolen guns.

There were several "hackers" in attendance including Craig Niedor, AKA Knight Lightning, who had been prosecuted for publishing PHRACK, an electronic newsletter that had included a copy of an E911 administrative document from BellSouth. Phibre Optik and Acid Phreak were also there as well as Steve Jackson, publisher of a number of role-playing game books including Gurps: Cyberpunk.

Mark Rasch, the U.S. Department of Justice trial attorney who had prosecuted the Robert Morris/Internet Worm case was there, along with a several representatives of various California district attorney offices, to describe some of the difficulties in prosecuting data crimes.

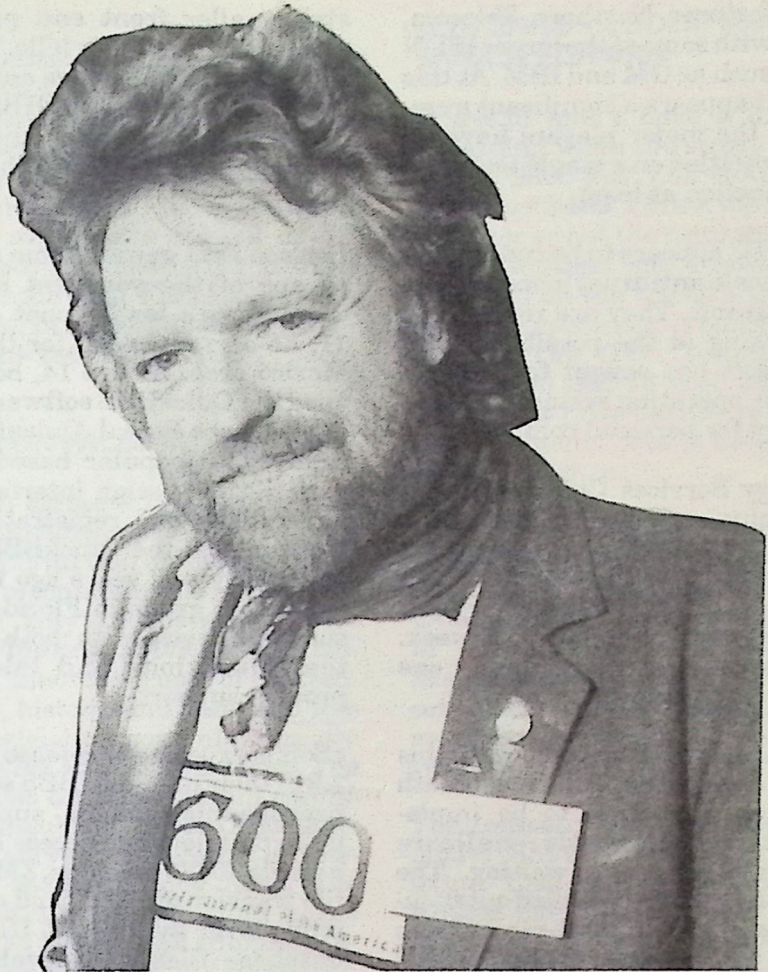
On the privacy front, there was much discussion of the Lotus Marketplace Database on CD-ROM that was withdrawn from the market after some 30,000 consumer complaints. The new calling party identification services offered by most of the Regional Bell telephone companies was bashed pretty much incessantly. Karen Nussbaum, Executive Direction of the National Association of Working Women presented a positively chilling account of how companies are using computer technology to monitor worker performance - turning some industries into virtual slave labor camps. Katherine F. Mawdsley, Associate Librarian at University of California at Davis, described the dilemma faced by Librarians when FBI agents

seek to obtain information from them on individual library patrons and their reading habits - an apparently active FBI program. And John Gilmore, who helped found Sun Computer, presented a stirring and eloquent call for individual rights to privacy that met with a wildly enthusiastic standing ovation.

John Perry Barlow and Mitch Kapor, co-founders of the Electronic Frontier Foundation were present and Kapor delivered an address describing the role of the Electronic Frontier Foundation in educating law enforcement and the public as well as assisting in defense of those charged with data crimes. He pledged the EFF to an ongoing role to ensure Constitutional protections are applied to the electronic frontier.

During the Electronic Speech, Press, and Assembly roundtable, Jack Rickard, of Boardwatch Magazine described for the conference the state of the BBS community and the possible effects the current law enforcement procedures could have. George Perry, Vice President and General Counsel for Prodigy Services Company was also on the panel and advocated diversity in the online world. During the presentation, a very loud and somewhat elderly gentleman from the audience stormed the podium raving wildly about Prodigy's recent conflict with e-mail users. Jim Warren, conference chair, stepped in and had the man removed from the room. He scheduled a separate meeting for that evening in an obscure meeting room in the hotel after the conference had closed for discussion of "the Prodigy issue", but only six people attended.

The entire conference was videotaped. A transcript of the proceedings of the conference is available at \$29.95. CFP Proceedings, 345 Swett Road, Woodside, CA 94062; 415-851-2814 fax.



John Perry Barlow - Electronic Frontier Foundation

TELEBITS

RUMORS

According to FCC Industry Analysis Division, AT&T regained some lost market share in the long distance carrier market during the fourth quarter last year. AT&T enjoyed **63.3%** of all Interstate long distance minutes compared to **62.9%** in the third quarter. This is the first reversal of a long term decline in AT&T's market share over the past few years.

ISDN STILL COMING - The North American ISDN Users Forum and the Corporation for Open Systems International claim to have hammered out an agreement calling for implementation of Belcore's *National ISDN 1* technical specification by the end of

1992. ISDN, or Integrated Services Digital Network, offers the promise of 64kbps data channels to the home over existing wiring. The Basic Rate service consists of two 64kbps bearer or "B" channels and one 16kbps "D" or supervisor channel. For the PC community, ISDN would mean data connections through the public switched telephone network at 64kbps or conceivably 128kbs rates. Where they've actually been implemented, ISDN has generally been only slightly more expensive than ordinary residential telephone service. The problem is that currently there are only islands of service available in a few cities. A national ISDN network appears to be ever just over the horizon - the horizon now seeming to settle at the end of 1992. But the COS organization now includes AT&T, several regional bell operating companies including Nynex, Bell Atlantic, and Southwestern Bell, and switch

manufacturer Northern Telecom, along with some of the larger ISDN users such as GM and IBM. At this point it appears a significant number of the major players have all finally settled on a single technical specification at least.

The FTC appears to be conducting a full scale anti-trust investigation of Microsoft. They are reported to be looking at the possibility that Microsoft has sought to monopolize the operating system software market for personal computers.

Prodigy Services Company is introducing consumer classified ads as part of their Prodigy services under the USA Today banner. An ad of seven, thirty-character lines may be entered for \$60 per week. The service is now claiming one million subscribers.

Are ALL telephone companies this way? While we hold our breath waiting for ISDN to be implemented nationwide, Bellcore shows us why we're waiting. The company recently mailed out thousands of direct mail pieces with "See for yourself what's possible today with ISDN!" blazed across the cover. The piece offered a 15-minute videocassette titled "Information Networking...ISDN Does It!" The price? \$295. That's \$19.67 per minute for those who care. Let's hope, ISDN itself comes in at something under that rate. Bellcore, Room 4D-114, 290 West Mount Pleasant Ave., Livingston, NJ 07039; 800-527-1080.

QUICKBBS AUTHOR JOINS ESOFT INC

Adam Hudson, author of the QuickBBS software package, has joined eSoft, Inc., developer of The Bread Board System (TBBS) and The Data Base System (TDBS) software. eSoft Inc. president Phil Becker jokingly announced that eSoft, Inc. now sports the "largest collection of BBS egos under one roof."

eSoft had earlier added Bob Hartman and Alan Applegate, two of the "Binkley Trio" who developed Binkley Term, a popular Fidonet-

style mailer front end package, along with Vince Perriello. The addition of Hudson brings authors of BinkleyTerm, QuickBBS, and TBBS under one roof under the leadership of TBBS author Phil Becker.

Hudson first gained some acclaim as one of the youngest regional coordinator's for Fidonet. At age 11, he served as RC for the New Mexico area. At age 14, he developed the QuickBBS software package in Turbo Pascal. QuickBBS became quite popular based on its very flexible design interface, and a very low \$25 registration fee. Hudson sold the QuickBBS package nearly two years ago to a development group in Florida. Hudson will assist with both design team functions and telephone product support.

eSoft is expected to release version 2.2 of their high-end BBS software package this summer - supporting up to 64 telephone access lines on a single 80486 machine, ZMODEM file transfer protocol, and compatibility with the dBASE III+ .DBF database files and development language. eSoft, Inc., 15200 E. Girard Avenue, Suite 2550, Aurora, CO 80014; 303-699-6565 voice; 303-699-0153 support BBS.

HAYES ANNOUNCES UPGRADES TO SMARTCOM III AND SMARTCOM EXEC

Hayes Microcomputer Products Inc. introduced new releases of both the Smartcom III communications package and Smartcom Exec.

Smartcom III is a \$199 communications software package offering several attractive features. The new Version 2.0 includes support for Local Area Networks, the ZMODEM file transfer protocol, and mouse support.

Additionally, Smartcom III offers several features not found on most communications packages. The product works well with LAN communications servers such as Novell NACS, 3Com Communica-

tions Server, Network Products ACS2 and NMP, and J&L NCS. In this way, a single modem or small pool of modems can be used on a network allowing anyone on the LAN to dial out by modem.

Smartcom III Version 2.0 also provides support for some fairly unique Hayes hardware product. The Hayes Ultra 9600, for example, can be used on an X.25 packet switch service directly. With Smartcom III, up to four simultaneous users can be online to a mainframe host via the single modem and packet connection. Smartcom III also makes full use of the 1 KB FIFO buffer and Direct Memory Access (DMA) capabilities of the Hayes Enhanced Serial Port (ESP) card. This is one of the most exotic and capable hardware additions available to solve the serial port bottleneck users are experiencing with very high speed modems. Finally, Smartcom III can make full use of the Hayes ISDN adapter card, allowing communications sessions over the 64 kbps Integrated Services Digital Network (ISDN) telephone service gradually appearing around the U.S.

Hayes other communications product is Smartcom Exec now in Version 2.1. Smartcom Exec, at \$129, had been a reduced function version of Smartcom III after the fashion of many software companies who are introducing a "lite" version of their more expensive software that eliminated some of the lesser used functions. Smartcom Exec seems to be moving towards some differentiation from Smartcom III. The new Exec version supports multiple languages including English, French, Italian, German, and Spanish. They've also added two new terminal graphic emulations, Prestel and Teletel, popular in Europe with some of the online services there. Hayes Microcomputer Products, Inc. P.O. Box 105203, Atlanta, GA 30348; 404-441-1617.

GALACTICOMM RELEASES THIRD PARTY CATALOG

Galacticomm, developer of the multi-line BBS software package THE MAJOR BBS has announced a recent merger with Scott Brinker's Galactic Innovations, a company known for development of third-party add-on software for the MAJOR BBS. THE MAJOR has made some inroads in the BBS community with one of the best interactive chat functions in the game - giving rise to a number of social/sex chat systems across the country. One of the main draws to these systems is interactive multiplayer games and Galactic Innovations was one of the leading producers of such games. Brinker will act as Vice President of Galacticomm and Bob Stein has been promoted to President and CEO. Tim Stryker, the company founder, will remain as Chairman of the Board.

The company recently released a catalog of third-party products for the Major. Approximately 75 add-on software packages are available from ten different vendors. We found *RING MASTERS* intriguing. It's a boxing simulation where you attempt to beat the stuffing out of some other hapless yuck who also dialed into the system. This may have wide ranging application across the world of BBS where flame wars run rampant. In theory, conference moderators could send two flamers who disagree "to the ring" to settle it once and for all. The program is available from InfiNetwork and they have an online demonstration of the product at (301)498-6183.

Galacticomm has also introduced a new full-screen editor add-on for their product at \$129 and an eight-port serial card termed the Octacomm at \$635. The company has also introduced the Database/BBS, an integrated package including their Major BBS and a Btrieve-based database manager allowing up to eight simultaneous databases on line with multi-user access. The product is priced from \$939 for a two-line version up to \$2439 for a 64-user system.

Most notably, the company has made up some Galacticomm T-shirts with their corporate philosophy blazoned across the back *"To do really cool things in the field of computerized communications, and make a buck at it."* Galacticomm, Inc., 4101 S.W. 47 Ave., Suite 101, Fort Lauderdale, FL 33314. 305-583-5990 voice; 303-583-7808 demo BBS.

BOOK ON FACSIMILE USAGE

We ran across a fascinating little book providing a wealth of statistical information on the use of facsimile machines in the home office. David Day's *Facsimile Facts and Figures 1990/91* details statistics, innovative uses of fax technology, history, and state and federal legislation governing the use of junk fax and fax directories. The book also contains the full results of a Mitsubishi Home Office Facsimile survey, and a report on telephone usage in Hong Kong. The book is 134 spiral-bound pages priced at \$69 plus \$9 shipping. International Facsimile Association, 4023 Lakeview Dr., Lake Havasu City, AZ 86403; 602-453-5330 voice; 602-453-9234 fax.

GVC SM-96 - A SOLID 9600 V.32 MODEM FOR \$399

A friend and I have a little bet regarding when the street price of a true 9600 bps V.32 modem will fall below \$400. I think the bet was whether or not the price would fall before autumn and I rather foolishly fell on the wrong side of the wager. Apparently, it barely made spring. The GVC Technologies, Inc. model SM-96 does not quite break that price barrier yet to the general public. But it doesn't fall far short either.

GVC is not a known name in modems. But actually, they've been manufacturing modems for nearly a decade as a source to a number of Original Equipment Manufacturer's (OEM). Several companies have been selling GVCs as house brands for a number of years.

The company has introduced the model SM-96 under their own name. Like the majority of V.32 modem offerings currently available, the GVC uses the Rockwell V.32 daughterboard. It offers CCITT V.32 9600 bps connections, V.42 and V.42bis error correction and compression, as well as the Microcom Networking Protocol MNP5 data compression. This suite of standards is becoming the most ubiquitous configuration among 9600 bps V.32 modems across the board.

SYSOP MODEM DISCOUNT PROGRAMS 9600 BPS V.32 MODEMS

Vendor	Support BBS	Sysop Price	List
ATI	(416)756-4591	\$350	\$699
CompuCom SpeedCombo	(408)738-4990	\$169*	\$279*
GVC SM-96 V.32	(201)579-2380	\$379	\$695
Hayes Ultra 9600	(800)874-2937	\$599	\$1195
Intel 9600EX	(503)645-6275	\$399	\$799
Multi-Tech MT932EAB	(612)785-9875	\$449.50	\$899
Practical Peripherals PM9600SA	(818)706-2467	\$339	\$699
U.S. Robotics Dual Standard	(708)982-5092	\$499	\$1295
Ven-Tel	(408)922-0988	\$499	\$899

* - NOT V.32 - Proprietary



GVC SM-96 V.32/V.42bis/MNP 5 Modem

The GVC unit is most notable in that it is physically quite small. It's 5.5-by-9 inch steel case, standing 1.5 inches tall, bucks the trend toward larger modem cases we've seen in the V.32 market. It also bucks the trend toward plastic. The sturdy steel case is reassuring. One of the most appealing things about this modem is that it actually has twelve front panel LED indicators including those marked 12, 24, 48, and 96 to show exactly what speed connection has been made and a TST light indicating links using the V.42 error correction. It also has a hardware call back security feature with a three-number memory. The unit features a five year warranty.

The SM-96 does use some fairly non-standard commands to switch various features on and off. But they are comparatively easy to figure out and a %F2 command sets the entire thing up for optimum performance in most situations.

For the relatively modest price, the GVC SM-96 offers a physically solid package, all standards necessary for 9600 bps error-free connections, and flawless performance connecting with a number of other brands at the 9600 bps rate. The best thing we can say about it is that with our best "scorched earth slash and burn" editorial posture, we can't find fault with this box. It works solidly under all conditions.

The modem carries a list price of \$699. They do discount the unit to \$379 for system operators but include a somewhat unusual proviso. You must have run a BBS for at least six months and it must be a FREE BBS. To take advantage of their system operator discount program, dial their product support BBS at 201-579-2380 and download the file GVCSYSOP.ZIP. Fill out the form and mail it in to GVC Technologies, Inc., 99 Demarest Road, Sparta, NJ 07871; 800-289-4821 voice.

Interestingly, The Hardware and Software Shoppe of Lexington Kentucky offers a special price on this modem specifically to user groups at \$399 plus \$6 shipping each. They've somewhat generously agreed to consider Boardwatch subscribers as a user group. All orders are prepaid, no COD. This price is not generally available to the public so you must mention either your user group affiliation or Boardwatch Magazine. The Hardware and Software Shoppe, 189 Moore Drive, Lexington, KY 40503; 606-277-9777 voice; 606-277-2676 fax.

EXPANDING SERIAL PORT OPTIONS

There are two basic approaches to operating a BBS on more than one telephone line. Multi-Node systems use a LAN to connect a series of computers to a file server. Each computer, or node, services one telephone line through one modem connected via a serial port. PCB-board, Wildcat!, Remote Access, and Searchlight BBS systems use this multi-node approach to service multiple telephone lines.

True Multi-Line systems use a multitasking software package on a single PC. SCO Unix, eSoft's TBBS, Galaticomm's The Major, and Surf Computer Service's Oracomm all use this approach. But the original IBM PC supported only two serial ports.

Serial ports classically consist of a port address and an interrupt. When a byte of data is received through the serial port, the Universal Asynchronous Receiver/Transmitter (UART) chip triggers a hardware interrupt. This is basically an electrical signal to the system's microprocessor that it has something requiring immediate attention. The microprocessor stops execution of the current program, saves its state in memory, and processes the interrupt by executing an interrupt service routine program. Usually, this program retrieves the incoming data byte by examining the memory location specified in the port

address. It puts the byte in a buffer in memory for later processing, and returns to its previous task.

The original IBM PC had two interrupts devoted to serial ports. COM1 used interrupt IRQ4 with a hexadecimal port address of 03F8h while COM2 used IRQ3 with a port address of 02F8h. That's still basically all the interrupts we have to work with for serial communications.

Many internal modems come with configuration options for COM1, COM2, COM3, and COM4. How can this be? Well, conventionally, COM1 and COM3 share the same interrupt with different port addresses while COM2 and COM4 use the other interrupt. In this way, each communications ports has its own port address, but they are sharing interrupts.

- COM1 = 3F8h IRQ4
- COM2 = 2F8h IRQ3
- COM3 = 3E8h IRQ4
- COM4 = 2E8h IRQ3

Note that no two devices can use the same interrupt at the same time directly. So while you can configure your communications ports as COM1, COM2, COM3, or COM4, you still can't have more than two in use simultaneously.

Multiline BBS systems typically use 8, 16, 32, or even 64 modems and telephone lines from a single PC. So there is a basic conflict between the needs of multiline BBS software, and the limits of the original PC design.

Most all such systems use serial breakout cards - often termed multi-port serial cards. These cards allow the use of more than two serial ports simultaneously, but special software must be written to take advantage of the serial ports provided.

Essentially, multi-port serial cards still use the two original interrupts and in some cases actually only use one of them to handle a large number of ports. This is accomplished

by adding a STATUS register to the equation. This is simply a memory location where the card can indicate, by the bits set on or off within the byte examined, which serial port caused the interrupt. On an eight-port card, for example, anytime any of the eight ports receives an incoming byte, the same IRQ may be used to signal the Microprocessor. However, the serial port interrupt service routine in DOS has been replaced by a software device driver for the card. The device driver software first examines the STATUS register on the serial card. This register will indicate which specific serial port caused the last interrupt by setting the bit corresponding to that port. In this way, the interrupt service routine can then go to the correct serial port address to get the incoming data byte. This technique allows a number of serial port addresses to all be mapped to a single IRQ.

The most popular multi-port serial card is manufactured by Digiboard Incorporated, 6751 Oxford Street, St. Louis Park, MN 55426; 612-922-8055 voice. Digiboard's most popular models are probably their four-port PC/4 card (\$459 list price) and their eight-port PC/8 model (\$685). Digiboard maintains an excellent product support BBS system at 612-922-5604.

Because it has been primarily a niche market, multi-port serial cards are not inexpensive. We did find a company in Taiwan that manufactures serial cards quite cheaply. Decision Computer International Company Ltd. offers a four port serial card for as little as \$36 and an eight-port model for as little as \$135. We priced an eight port card, loaded with NS16550A UART chips, at \$170. The difficulty is in dealing with a company in Taiwan, you get virtually no support, the shipping can be as high as \$65 for a single card, and arranging the order and payment can be somewhat difficult. Casper Chang, Decision Computer International Company Ltd. 4/F No. 31-3, Alley 4, Lane 906, Ming-Shen

East Road, Taipei, Taiwan, R.O.C.
886-2-766-5753 voice; 886-2-766-5702 fax.

As a rule, most DOS-based multiline BBS software packages that provide their own multitaskers cannot run external programs, often termed "doors". The holy grail of multiline computing is to combine the ability of multi-node software, such as PCBoard, to run external programs, with the multiline capability of systems such as TBBS or The Major. So far, it hasn't happened. But there are some interesting experiments. A number of operators have successfully run two, three, or even four copies of PCBoard under Quarterdeck's Desqview multitasker. More recently, there has been some interest in running several BBS sessions under Microsoft Windows Version 3.0. Here again, the problem is that Windows normally supports only two simultaneous serial ports.

Cherry Hill Software has introduced a \$99 software driver program titled W3COM5 which marries Windows version 3.0 to the Digiboard PC/4 four-port serial card. It uses the four-port card on one IRQ while also using the existing serial port on the other to support up to five comm ports, simultaneously, from one PC, under Windows 3.0. In this way, you could conceivably run five simultaneous copies of Remote Access or Wildcat under Windows, with each serving a single telephone line to run a five line system. Cherry Hill Software, 1930 East Marlton Pike, Bldg. O, #76, Cherry Hill, NJ 08003; 609-751-2809.

SHAREWARE NEWSLETTER AVAILABLE

There are some 50,000 shareware programs available for the IBM PC. This treasure trove is actually overwhelming. Current versions of DOS only allow you to run one at a time and even with Desqview and Windows you can't quite get all 50,000 in action on one machine simultaneously. The number of

creative people out there coding into the night is frightening. And because of the online world, almost any title you want is a telephone call away. Fortunes are made and lost. Titles become "best sellers" and are then knocked off by newcomers with a better idea. It's actually one of the most exciting industries in the world and you are seeing and helping it form. If we didn't do a magazine on the online world, we'd probably do one on shareware.

And Steve Enzer does. We recently received a copy of his *Alternative Software Bulletin*, a 16-page newsletter on shareware. It's tastefully done on ivory paper (so we're a bit biased here), and unlike Boardwatch, it features great graphics design and layout. The newsletter is published ten times per year at \$18. It has some affiliation with Public Brand Software in that they have an area on the Public Brand Software BBS at 317-856-2087. But it does seem to be a genuinely independent publication. There are no ads or come-ons to order shareware from them or from Public Brand although they do list the file name of the program on the PBSBBS. But they also have a listing of What's New On-Line that covers various CompuServe and GEnie forums and our impression is Enzer is trying to present independent reviews of shareware software programs. The March 1991 issue, their fifth, includes a roundup of genealogy programs and another extensive article on investment analysis software. Most notably, the publication includes lots of artfully done screen shots. Binary Press, P.O. Box 757, Brooklyn, MI 49230; no contact telephone.

16550 UARTS - NOT SO SIMPLE

The current fad in online paternalistic advice revolves around the use of higher speed modems and the need to upgrade your serial port. Many people are investing large wads of soggy cash in high speed 14,400 V.32bis and 9600 bps V.32 modems. Vendors claim data throughput of over 38,000 bits per second in all their literature. And

after purchasing such modems, most users feel a bit miffed if they can't get the advertised throughput.

There are actually a couple of issues here. First, you are not going to get throughput of 38K over analog telephone lines. Forget it. To be vendors, vendors have to vend. And to vend, they have to sell it just a bit. And to sell it just a bit, they have to first shovel it a bit. Nobody gets 38K throughput in the real world. So if you don't, it does not mean you've been cheated, your modem doesn't work, or your PC is too "old."

But there are a few things to note. The claims are based on theoretical throughputs obtained through data compression and error correction. Most of these new high speed modems offer CCITT V.42bis and MNP5 as features. CCITT V.42 and V.42bis are international standards for data error correction and compression respectively. MNP5 is an older, but perhaps more common, data compression technique developed by Microcom, a modem vendor. These compression techniques provide theoretical data compression at up to 4:1. Using 9600 bps modem connections, if you compress data to 1/4 its original size, your effective throughput would appear to be 38.4 kbps. The problem is, unless you routinely transfer a 100K file full of nothing but the character "A", you won't ever see it. On normal text files, you can occasionally pass data at close to 3000 characters per second or 30,000 bps. On the already compressed .ARC and .ZIP files commonly transmitted in the world of bulletin boards - more likely 1100 cps on a V.32 connection. With the 14,400 bps connections offered by V.32bis, you may see 1700-1750 cps.

Unfortunately, some older machines can't quite handle that high a data rate through the serial port. The original 8250 Universal Asynchronous Receiver/Transmitter, or UART, in the IBM PC was rated at 9600 bps. Contrary to current online wisdom, it WILL generally do more than that, but not reliably so.

The more recent 16450 UART common in AT class computers does a better job, but as modem rates increase, the serial port problem becomes more apparent. And when running multitasking software such as Desqview and Windows, it is not so much the UART that causes problems as the fact that the Microprocessor can only do so much in a set period of time. If it's spread too thin among applications, it is quite expected that some incoming bytes will be lost through simple inattention by the processor.

If your system is not getting the speed you need, it might pay to take a look at your modem LED indicators during a file transfer. During high speed downloads, your receive data (labeled RX or RD usually) light should be on with a fairly steady flicker with a windowed protocol such as ZMODEM. If you notice some fairly regular pauses in the process, indicated by a switch from receive data to transmit data (TD or TX usually) and back on the modem light panel, you may need some serial port help. Your system is sending flow control to the other modem to tell it that some data has been lost and needs to be resent. The data was lost because the two modems overpowered your serial port, and your computer signalled that it lost something and is requesting the last block be resent. This process can dramatically slow the rate of transfer.

The standard solution noted online is to replace the UART chip with a model manufactured by National Semiconductor titled the NS16550A. This chip adds a 16-byte first-in/first-out (FIFO) buffer. The buffer, when activated, allows the data rate to get a few bytes ahead of the computer's ability to process the incoming data occasionally, without data loss. This is true. It works. But it's not as simple as it sounds.

For one thing, the NS16550A operates just like the 16450. It was designed to be pin and software compatible with it. So replacing a 16450 with a NS16550A doesn't of

itself do anything whatsoever. The NS16550A must receive a software command to turn on the FIFO buffer. If your communications software doesn't support the NS16550A FIFO, you'll never know its there. There are several public domain utilities floating around to turn on the FIFO before loading your communications software. This works in some situations. But it can really complicate life in others. Some software actually locks up the computer if it encounters the FIFO. Our serial label printer software locks up the machine if the 16550 FIFO is on when it comes up. So does a credit card validation program that uses the modem. So to get the use of a new UART, you must have a communications program that will use it.

The actual physical replacement of the UART chip can be problematic as well. For one thing, most of the clones sold today are sold on price. One way to lower price is to combine functions on a single card. You may find your serial port is on a little half length card with a game port, two serial ports, and a printer port. The UART socket described in a lot of magazines may not even be present. You may have a tiny, square, surface mounted chip that handles printer functions, serial ports, game ports, and anything else. In many systems sold today, the serial ports may even be on the mother board of the computer. Finally, if you are lucky enough to have normal UART chips on a serial port card, most often you will find the chip soldered into the card with no socket provided.

You can desolder the chip and replace it with a socket and a new chip of course. Or you can take the card and slam dunk it into your twenty-year drawer. Unless you happen to have a shop where you regularly solder electronic components, or you have a very strong HAM radio reputation to live up to, it is absolutely not worth the trouble.

We went shopping for a cheap serial port card recently and found a dandy. The Everex 170B Magic I/O card features three serial ports, a game port, and a printer port. All three serial ports are fully configured with UART sockets, but only one has a UART in it as shipped. Jumpers on the card allow a flexible array of configuration options. It's a half-slot card and we bought one at Fry's Electronics for \$59. ANS16550A UART chip cost another \$11.95. Assembly took about five minutes. So, for about \$71 plus shipping you can solve the UART problem with regards to hardware. Fry's Electronics, 1177 Kern Ave., Sunnyvale, CA 94086; 408-733-1770

A public domain program with very little identifying data is available titled 16550.EXE. The command 16550 1 ON would enable the FIFO buffer on a serial port designated COM1, while 16550 1 OFF would disable the buffer. 16550 1 ? causes the program to return the current state of the buffer. Again, note that some programs that make use of the serial port can use 16550 buffered modem, and others simply cannot. The 16550 program makes it easy to experiment with program operation in the different states. The program is widely available for download, and of course we have a copy on the Boardwatch Online Information Service at 303-973-4222 for system subscribers.

UNICODE - A NEW ASCII FOR A NEW WORLD

The American Standard Code for Information Interchange (ASCII) evolved as the lingua franca of virtually all computers everywhere. It uses a single 8-bit byte of data to represent all characters of the alphabet, numbers, and punctuation. The 8-bits allow 255 different characters to be represented. As the online world evolves to become truly global, 255 just isn't enough.

Most non-English languages use characters not included in the original ASCII definition. The problem is that ASCII is American in origin

and use and simply doesn't account for the many variations inherent in scribing other languages into print. French, Italian, Spanish, and German, all have unique letters that are required to accurately transmit their languages - despite the fact that most of the alphabet is quite common to our own. When you consider Cyrillic, Arabic, and numerous Asian alphabets, ASCII doesn't work at all.

This past February, a company titled Unicode Inc. released the final draft of Unicode, Version 1. Unicode is intended as a replacement for ASCII and will support virtually all living languages by using a two-byte (16-bit) code capable of presenting 65,536 different characters. Unicode Inc. counts among its members representatives from IBM, Apple, Sun, Microsoft, Novell, and NeXT.

Unicode is not entirely different from ASCII. The lower 8-bits actually contain ASCII along with the European accented characters usually referred to as Latin-1. The upper 8-bit byte allows the addition of additional accented characters defined in other ISO Latin standards, an international phonetic alphabet, and codes for Greek, Cyrillic, Armenian, Hebrew, Arabic, African, Middle Eastern, Asian, and Far Eastern languages. They have also defined a host of punctuation marks, and math, graphic, and technical symbols along with other symbols referred to as basic dingbats.

The code supports both Hiragana, Katakana, and Kanji alphabets used in Japan, Bopomofo from Taiwan, Hangul characters from Korea, and Han - a generic term for Chinese ideographs. In all, nearly 25,000 characters are mapped in Version 1 - leaving room for a future expansion of as many as 40,000 characters.

A number of BBS systems in the Far East already use double-byte codes to represent Chinese and Japanese characters. The one drawback to all this is storage. The typical word processor text file is twice as large as current since each

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character requires two bytes of storage vice one. A mass conversion from ASCII to Unicode appears troublesome. For more information, contact The Benjamin Group, 3945 Freedom Circle, Suite 540, Santa Clara, CA 95054; 408-988-0831.

TELEVISION TRANSCRIPTS

The popularity of cable television has notably broadened the diversity of offerings available on the one-eyed monster. A number of news magazines, science and technology shows, and political commentary items are now available that deal with, and in some ways reflect, what is considered topically important in our society. Despite the constant blare of critics who decry the quality of television programming, the world watches on. The one drawback is once a program has aired, it is gone into the ether. Aside from the occasional rerun popular with situation comedies, all the work that

went into Barbara Walter's journalist masterpiece is lost to us, for the most part, as soon as the closing credits roll.

But if you're a news or public television junky, you've undoubtedly seen the closing screen noting that "transcripts of this show are available from Journal Graphics." Journal Graphics now provides written transcripts of some 50 shows weekly including most of the numeric news magazines such as, 20/20, 60 Minutes, 48 Hours, Face to Face with Connie Chung, and Nightline; as well as a host of Public Broadcast Television shows such as Nova, American Experience, Bill Moyer's Specials, Frontline Special, Race to Save the Planet, and Washington Week in Review. They also provide transcripts for some of the racier fare such as Donahue, Giraldo, The Oprah Winfrey Show, and The Sally Jessy Raphael Show; and numerous CNN broadcasts such as Crossfire, Evans and Novak, Larry

King Live, Health Week, Pinnacle, and Science & Technology Week. Transcripts are typically available for \$3 to \$5 depending on the show.

The company is a bit unique. According to company President Jim Smith, some sixteen transcriptionists are located all across the U.S. They tape their assigned shows, transcribe them on personal computers, and upload the files to a two-line Major BBS system in New York. All transcripts are indexed using a Foxbase database.

The index itself is fascinating and is available published as a quarterly printed publication at \$21.95 which includes a January index of the entire previous year. The same index is also available on 3.5-inch or 5 1/4-inch floppy disks for \$37.95. This electronic data version is particularly attractive as a research tool.

Simply counting the topics dealt with on television over the past year provides fascinating insight into what our society found notable to talk about on television over the past year. We found a transcript of **We Know Where You Live** - a Nova show on junk mail, databases, and personal privacy issues fascinating. Likewise a transcript of an August 23rd Good Morning America show that interviewed Steve Wozniak and Gail Thackeray on the subject of computer hacking was fascinating. The index is organized topically of course with entries such as Farming and Agriculture, Gorbachev, Soviet Union, Middle East, Children, Persian Gulf War, Roman Catholicism, Sex Crimes and Rape, Parenting, Defense/Pentagon, and so forth. A section on Comics and Comedians lists dozens of interviews with different comedians. Only in seeing all this assembled together in a 326-page printed index can you get a grasp of how much information is transmitted once via television and essentially lost in the ether.

The company has a number of delivery options. Printed transcripts can be ordered at \$3 to \$5 each and charged to your credit card. Shipping charges are a bit pricey at \$2.50 for the first transcript and \$1 for each additional. Fax delivery is available at \$15 for half-hour shows and \$5 for each additional half-hour. The company even offers a \$250 monthly satellite/FM side carrier delivery service that allows you to receive 50 programs each week as they come online. And according to Smith, they are considering using a BBS to provide online search access to the index and online transcript orders.

The service is not only unique, but the company organization illustrates a point concerning telecommuting. Not only do all the transcriptionists work from home and communicate with the home office by modem, but according to Smith, most of his work in running the operation is done by voice mail, modem, and other remote access methods.

Many of the early self-styled techno-sages and futurists predicted that a significant percentage of our population would work at home and commute to the office by electronic means. This has been seized on and parroted ad infinitum with much effort expended to work out the details of commuting to the office electronically - telecommuting. I can't quite subscribe to this theory as it stands. The numbers are right but the paradigm is wrong - much as Alexander Graham Bell foresaw a day when telephones would be installed in every city - for the reception of musical concerts.

Today telephone's ARE everywhere but they don't carry music. Likewise, tremendous numbers of people WILL work from home. And they WILL communicate primarily by electronic means. But the conventional office structure won't play any significant role in it at all. They will be primarily cottage industry homeworkers - many if not most in some form of information industry or direct sales. Journal Graphics Incorporated is a working example of a new form of organization, involving more than just a single household cottage shop, that is organized, and operates primarily electronically with workers located across the nation. A very interesting example. Journal Graphics, Inc., nominally located at 267 Broadway, Floor 3, New York, NY 10277; 800-825-5746 voice.

MULTI-TECH ANNOUNCES 14,400 BPS V.32BIS MODEM

Multi-Tech Systems Inc. has earned a good reputation among BBS operators for their very solid modem line. The company recently revealed they are wrapping up a new model, the **MultiModem V32B**, offering full-duplex 14,400 baud connections using the new CCITT V.32bis standard. V.32bis is an extension to the V.32 modulation standard now universal for 9600 bit-per-second (bps) modem connections. The V.32bis standard raises the speed ante 50% to 14,400 bps. Currently, only U.S. Robotics

and Forval America offer V.32bis modems although Intel PCEO is also rumored to have a V.32bis model "in the works."

The new model is not currently available and Multi-Tech sales group expects delivery in late May or early June at a list price of \$1099.

Multi-Tech now offers a BBS system operator discount program allowing BBS operators to purchase modems at 50% off the retail list price. Their MT932EAB model has been popular offering V.32 modulation at 9600 bps, and both V.42bis and MNP 5 error correction/compression. The external model lists for \$899 and is available to qualified BBS operators at \$449.50.

Multi-Tech produces a very full line of communications products including rack mount modems, packet switch interfaces, multiplexers, and even LAN equipment. Full price list and descriptions are available on their product support BBS at 612-785-9875. Multi-Tech Systems Inc., 2205 Woodale Drive, Mounds View, MN 55112; 800-328-9717 voice.

HAYES ANNOUNCES POCKET MODEM

Hayes Microcomputer Products Inc. has introduced a 2400 bps pocket modem for laptop owners titled **Pocket Edition 2400**. The unit is a tiny 3-ounce, 3-inch long modem designed specifically for the traveler and laptop market. The tiny modem requires no external source of power such as AC, battery, etc., deriving all needed power from the RS-232 serial port and the telephone line itself. The unit passes data at 2400 bps using CCITT V.22bis, at 1200 bps using either Bell 212A (common in U.S.) or V.22 (common in Europe), and at 300 bps using Bell 103 standards. But it does not offer the V.42bis or MNP error correction or fax capabilities becoming common in pocket modems. It's main draw is a very portable size. It comes with 18-inch 9-pin serial cable, six

foot telephone cable, Smartcom EZ communications software, and a carrying case. The unit plugs into the 9-pin serial ports common to laptops and carries a list price of \$179 and a two-year warranty. Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348; 404-441-1617 voice. Hayes operates a toll-free product support BBS at 800-874-2937.

HARDWARE-BASED HARD DISK DATA COMPRESSION: EXPANZ VS. STACKER

By: Matthew Rapaport

In the last five years, a wealth of utilities have appeared to help PC users get more mileage out of precious disk real estate. Most of these products require you to perform compression/decompression cycles manually. Archive utilities like **ARC**, **PKZIP** and **LHARC** have become invaluable aids in the process of transferring files between systems. A few programs, like **LZEXE** and the newer **PKLITE** permit compression of executable programs with automatic decompression into RAM when the program is run, but they suffer from compatibility problems with some software. **SQUISH Plus** from Sundog Software (New York City) performs on-the-fly compression and decompression of all types of files, but it slows disk performance. Other such products like **Fontspace** and **Newspace** from Isogon Corp., **SQZ Plus** from Symantec, and **Cubit** from Softlogic, are designed to function only with certain data files like dBase tables, and Lotus 1-2-3 spread sheets.

In 1990, two new hardware-based compression systems emerged: **EXPANZ** from Infochip Systems of Santa Clara California, and **STACKER** from Stac Electronics of Carlsbad California. These systems use hardware mounted on cards that fit into PC board slots. Both promised compatibility with all PC applications software, and performance that actually improves disk throughput.

My interest in the value of these technologies caused me to forgo my usual trepidation regarding un-

tested products. I ordered the **EXPANZ** card immediately upon its release, installed, and played around with it for a couple of weeks. A number of problems with the product caused me to reject it, but undaunted, I tried the **Stacker** product just a few months later. What follows is an independent assessment of both products, their advantages, and some of their problems.

Considering the difference in approach between the two technologies, their performance is remarkably similar. Both achieve compression ratios of 1.5:1 to 1.9:1 on text files. Executable modules attain about 1.5:1 compression ratios, while database, and many kinds of image files are squeezed from 2:1 to 4:1 ratios. On one data dictionary file, I achieved 8:1 compression, exactly the same with either product. Compression/decompression speed is excellent. At worst, disk operations take no more time than they do without the products, and for many operations, there is a noticeable performance increase because you are reading and writing smaller disk files.

Currently, the **EXPANZ** card works only on machines running PC or MS-DOS version 3.x (ADOS 4.x and Compaq 3.3x compatible version is due shortly). It actually converts the disk drive to **EXPANZ** volumes on a partition-by-partition basis. For example, if you have a 72MB disk divided into three partitions, C:, D:, and E: of 30MB, 30MB, and 12MB, you can make one or all of them **EXPANZ** volumes. The product correctly handles the enlarged capacity of these drives even though they exceed the DOS 3.x 32MB volume limit, and this applies as well to single files that may become larger than 32MB in uncompressed form. The product is compatible with device drivers that permit construction of large volumes under DOS 3.x. For example, if you use **Speedstore** or **Vfeature** to generate a single 60MB partition, it can be successfully converted to a compressed volume.

There is also a 40K driver that may be loaded into high memory using memory management utilities like Quarterdeck's **QEMM386** or Qualitas' **386Max**. The driver alone will not permit reading or writing to compressed volumes. If the compression card fails, you cannot access compressed data. While you can compress the boot partition, this is a little dangerous. If your machine fails to boot from the hard disk one day, you must boot from a floppy containing the **EXPANZ** driver or you risk destroying your data. The system supports RLL, MFM, EDSI, and SCSI drives, though in the latter case, you can not compress the boot partition.

EXPANZ replaces the normal File Allocation Table with a special FAT. While functional in most application, this special FAT prevents the use of disk utilities such as **Optune** and **SpeedDisk** to optimize and defragment. Not only will these products fail to perform, they will destroy your data if used on compressed volumes. This caveat applies not only to third party disk utilities, but such traditional DOS tools as **CHKDSK**. The disk shipped with the card includes a special version of **CHKDSK** (**IDISK**) which functions like **CHKDSK** (including repair operations) on a compressed volume.

Otherwise, the product works well, though in my environment I had some problems when running Magellan under Desqview. During Magellan's file indexing and compression cycle, the product locks up when it tries to index files on a compressed volume. This occurs only under Desqview for some reason, but at one point, all my data on the compressed volume was scrambled and I could not recover it without restoring from backups. The Infochip technical support group insisted they could not replicate my problem, so it was quite possibly a result of the combination of drivers on my machine. Other than this, I had no problem with any of my application software.

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The new **User Manager** for TDBS systems, the full registration and member tracking system that is a true member data base. It has keyword search, on-line user resumes to help users get to know each other, a notepad to let you keep notes on every user, etc. It will present SysOp defined text messages on pending expiration of membership and make the necessary access changes on expiration. Allows users to join as members or renew their membership using credit cards on-line.

The **Message Manager** for TDBS systems. Some of the highlights of this package are: Support for up to 10,000 message areas; SysOp configurable full screen editor; SysOp configurable reply quoting; the capability of editing messages after they are saved; users can change several read options at any time and save them to disk to make the changes permanent; users can subscribe to up to 60 areas and see all the new messages in each area when they enter the message menu; complex search capability on any combination of FROM, TO or SUBJECT fields; message text can be searched for strings; FidoNet format message import and export utilities are available. This program is priced at \$179.00.

The extremely popular game of **StarQuest**. This is the first multi-player, multi-user space game to run under TBBS/TDBS. You can create a universe of a size that is best for your system and its users and your users create and capture settlements and become active wheeler/dealers across your universe. Their settlements can be attacked and captured whether the user being attacked is on-line or off, and as the users gain in strength and worth the computer controlled pirates and the tax assessor will be there to lend a helping hand. This on-line multi user game has already proven itself to be popular with the users and it's not only a lot of enjoyment for them but it can quickly pay for

itself on systems charging for access. This program is priced at \$149.95.

The powerful and productive **On-Line Sales Manager**. This on-line catalog sales program is written by Jeff Johnson, another pioneer in TDBS software, and it easily shows the power and capabilities of TBBS and TDBS. The Sales Manager will display a catalog of items for sale under categories you specify, each item can have a full descriptive text file attached to it and the user can place an order at any time and continue to browse through the catalog. When done the user selects to order and is presented with each item and given the opportunity to indicate how many are to be shipped. Developed as a modular package this software will handle everything from a low level order entry system to a fully featured point-of-sale package and do all the things you would expect of a full sales package. Please come and work with it on-line. Prices start at \$395.00.

We have many application and entertainment software packages on-line, like the all new Classified Ad program, Super Star Trek, Lexi and new software under development.

There's a lot available for the TBBS/TDBS SysOp, as well as for anyone interested in an Information System (BBS). If you want to learn more about TBBS/TDBS just call our system and look through Our Demonstration and Sales Area and register as a customer. GW Associates offers full support to all SysOps and we have several excellent programmers available to help with your applications and customization. Please call our system at (508) 429-1784 (N,8,1) and keep up with our new releases or call us on our voice line at (508) 429-6227 if we can help you in any way. Installing and remotely supporting commercial systems is our **ONLY** business, and we're very good at it!

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The **STACKER** product operates on DOS versions from 3.1 to 4.x, including Compaq DOS 3.3x. It takes a tack opposite to that of **EXPANZ** by creating virtual drives from your regular volume. That is, a 32MB disk D: under DOS 3.x can be divided into two volumes (F: & G: in our example) of 16MB and 15MB respectively (smaller volumes may be created at the user's discretion). At least 1MB of each drive is automatically maintained in an uncompressed state. A 60KB section of this partition is used to store hidden, read-only files that provide driver handles to the compressed volumes located on that drive. Otherwise the space can be used as usual. The product assumes an average compression ratio of 2:1 permitting storage of up to 32MB on a 16MB virtual volume. If you get better compression ratios, say 4:1, then you should not create a virtual drive larger than 8MB for these files because the product will not permit storage of more than 32MB on a single virtual volume. DOS 4.x raises this limit to 512MB.

In our three drive example above, you might end up with drive letters ranging from C: to J: if you convert all of your disk real estate. The only limitation is that **STACKER's** driver, any drivers loaded ahead of it (like memory managers), along with your **AUTOEXEC.BAT** and **CONFIG.SYS** files must reside on an uncompressed volume. Any two disk letters can be swapped using a special driver included with the package. For example, virtual drive F: can be named C:, G: can be named D:, etc.

Like **EXPANZ**, there is a driver that occupies 20K and can be loaded into high memory. The system also operates in a software only mode, and is also sold this way (intended for laptops). In software mode, the driver occupies 37K and will permit reading and writing compressed volumes. The significance of this driver can not be over estimated. My **STACKER** card failed on its fifth day of operation. The failure was reported at boot time, and the software-only ver-

sion took over automatically. I lost no data, and was able to operate normally until a replacement card arrived. Software-only operation is reasonably efficient. In benchmarking large file transfers to and from compressed volumes, I measured a 25% performance increase using the **STACKER** card vs. the software alone on a 20MZ 386. Adding a disk cache with a delayed write to the hard disk reduced this difference to only 12%.

As for compatibility, **STACKER** seems to do better than **EXPANZ**, at least in my environment. The product reads and writes directly to/from disk sectors rather than clusters, so optimizers that work at the cluster level will not really optimize your compressed volumes. In fact, they may fragment them more, but at least they will not destroy your data. My Norton Utilities reported correctly on my compressed volumes recognizing their new capacities. Third party undelete utilities also work properly. I have had no problems with Magellan under Desqview in either hardware or software-only compression modes. On the other hand, **STACKER** will not operate in an environment with OEM disk drivers used to produce large volumes under DOS 3.x because these alter the DOS sector size which **STACKER** depends upon. It does function equally well with MFM, RLL, SCSI, and ESDI drives.

CONCLUSIONS: The **EXPANZ** card is the more configurable of the two products. Both use a 16K buffer window in high memory. The **EXPANZ** buffer can be located anywhere in high memory while the **STACKER** buffer is limited to a smaller range of addresses. **EXPANZ** has jumpers that permit the use of different interrupt request (IRQ) lines, **STACKER** does not. Finally, **EXPANZ** is not restricted by the DOS 3.x 32MB limit, does not force the generation of new virtual drives to access your compressed volumes, and operates on floppy drives as well. You can also optimize the **EXPANZ** FAT for dif-

ferent compression ratios, something you can not do with **STACKER**.

STACKER, by contrast, appears to be safer. A failed **STACKER** card will not impede data access. You can run test and undelete utilities on **STACKER** volumes. It is a bit more cumbersome both because of its multiple volume requirements, and because it requires the minimum 1MB non-compressed volume on each drive in which you build compressed partitions. On the other hand, it is already compatible with DOS versions ranging from 3.x to 4.x, but will not yet operate on floppy disks. Either product is worth examining in the constant effort to get more from each byte of hard disk.

For more information contact: **EXPANZ**, InfoChip Technologies, 2840 San Tomas Expressway, Santa Clara, CA 95051; 408-727-0514 Price: \$199

STACKER, Stac Electronics, 5993 Avenida Encinas, Carlsbad, CA 92008; 619-431-7474 Price: \$225 (software-only version: \$125)

COMMUNICATIONS BASICS

9600 BPS MODEMS

by Alan D. Applegate

All of us in the online community started somewhere. For me, it was a simple Radio Shack 300 baud modem connected to a Radio Shack Color Computer 2. It was terrific! I found that there was a tremendous universe of information out there for the asking. The more I learned and the more I got out of it, the more I wanted. But the longer I spent online, the slower the world appeared to turn. Soon I found myself hungering for a 1200 bps modem!

My Avatex 1200 literally sprayed data all over my computer screen, moving bits at a whopping FOUR

TIMES faster than my now-antique 300 baud modem. Sure, the effect lasted awhile, maybe it lasted even a long while. But it wasn't exactly forever before I found myself longing for a 2400 bps modem and the doubled throughput that it offered. Data was like a drug. I wanted more, and I wanted it faster, and my USRobotics 2400 internal barely stirred my soul. I knew I needed more, and I needed it now.

My first high speed modem is still in service, and it still amazes me. Sure, I'll want more someday ("more" is already available today in fact) but this is where I get off the roller coaster of modem technology, happy and relatively sated (at least for now).

If you're well on your way to acting this story out yourself, this article will help you make some wise (or at least informed) choices about 9600 bps modems. But a little history is in order before we begin talking about specifics.

Modems that operate at 9600 bps have been around for some time, and have existed in many forms. The first to appear were half-duplex modems, meaning that data flowed in only one direction. When data needed to flow in the opposite direction, the modems "flip-flopped" the direction of the line, and data went the other way. This contrasts with the full-duplex modems you're most likely used to (the 300, 1200 or 2400 bps modem you have is most likely full-duplex).

Because so much data was being sent so quickly, full-duplex 9600 bps modems were more difficult to design and implement. Sophisticated echo cancellation and signal processing circuitry was required, and for a long time the cost of such technology was prohibitively expensive. The preeminent full-duplex design was CCITT V.32, an outgrowth of the Consultative Committee on International Telephone and Telegraph (CCITT) standards organization that also gave us V.22bis, the standard that our 2400 bps modems use. Al-

though V.32 has been a standard since the early 1980s, modems that incorporated it cost several thousand dollars each until relatively recently.

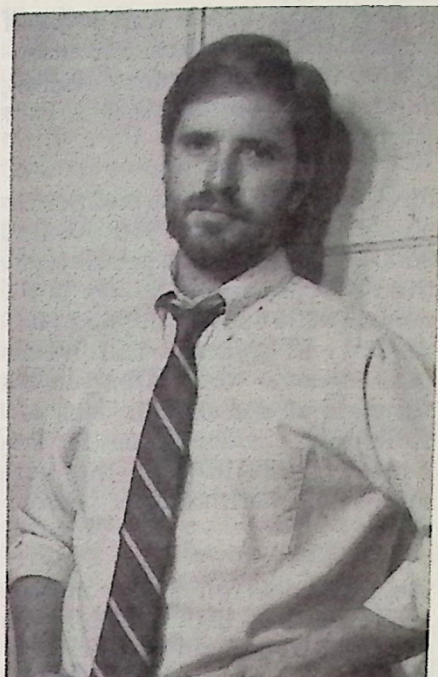
For this reason, several modem manufacturers created their own less expensive proprietary technology for 9600 bps modems. One of the most prominent was USRobotics' "High Speed Technology" or "HST" as its commonly known. USR's HST modems found their way into the hands of BBS Sysops by the hundreds, thanks mostly to USR's pioneering of the "Sysop discount program" concept. Sysops could buy them at a steep discount, promoting them to their users and other Sysops. HST became an early front runner in the high speed modem race.

Hayes and Telebit weren't to be left behind. Hayes developed a method commonly called "ping-pong", in effect, a half-duplex variation of V.32. This technology formed the basis of the Hayes V-Series 9600 modems, which found most of their use in business environments.

Telebit developed "Packetized Ensemble Protocol" or "PEP" which also had some following among the BBS community. Today, however, PEP modems find the highest concentration of usage in the Unix/Internet/UUCP community, Europe, and the far east with few public BBS systems in the US using them. The PEP technology was particularly resistant to noisy lines, which contributed to their popularity across the Pacific Rim.

The problems with a fragmented 9600 bps modem marketplace quickly became apparent. HST modems only talked at 9600 to other HST modems. If an HST called a Telebit, they'd talk at 2400 bps. In fact, none of the three technologies talked to one another at all at high speed - 2400 bps was the most you'd get.

The pressure was on to move toward an established standard common to all manufacturers. V.32 was a logical choice, but remained very expensive. Rockwell, a chip



set maker, sought to address the issue of cost with V.32 technology by designing a V.32 modem "module" which modem manufacturers could design into their products at low cost. Several million dollars worth of research and development later, the Rockwell V.32 "daughterboard" module was ready. Most of the major manufacturers designed modems around it, with USRobotics among the first to bring one to market.

Their Courier HST Dual Standard remains a popular choice today (though they've since abandoned the Rockwell module in their designs). In addition to V.32 compatibility, the Dual Standard also has HST compatibility so it can communicate with the thousands of HST modems still in use. Hayes and Telebit have also developed "dual personality" modems that are V.32 compatible, while still able to talk at high speed with their earlier proprietary efforts.

All of this is fine and good, but what if you're trying to select a 9600 bps modem for yourself?

Well, prices are much lower today, and it's now possible to buy a 9600 bps V.32 compatible modem for

around \$400. That's still a lot of money, so it makes sense to examine all the issues before sinking hundreds of dollars into a new computer toy.

First, the issue of price and performance. It's true that you can find 9600 bps modems at prices lower than \$400, but look closely. Is the modem 9600 bps full-duplex? Half-duplex and asymmetrical full-duplex modems won't offer you the throughput and smooth "feel" of a full-duplex modem because they constantly "flip-flop" the high speed data path as described earlier.

Asymmetrical full-duplex modems move data at high speed in one direction only, and offer a slow-speed "back channel" that in theory eliminates the "choppiness" of a half-duplex modem. In reality, these modems still have an awkward feel online, and don't offer throughput comparable to full-duplex modems in most situations.

Many 2400 bps modems claim "throughput over 9600 bps!" so don't be deceived by baud rate claims that include the effect of data compression. A 2400 bps modem with V.42bis data compression can in some situations deliver data at effective rates approaching 9600 bps, but in real world situations, virtually never do. Expect modest throughput improvements with data compression - but it's not a substitute for a high speed modem. And virtually all 9600 bps V.32 modems now also include the V.42bis data compression as well - providing data throughput somewhat higher than 9600 bps as well.

When pricing V.32 modems, look at the other standards it supports. Does it also have V.42 error correction and V.42bis data compression, or is MNP the only protocol for that? If it's MNP-only and doesn't feature V.42/V.42bis, pass it by - it doesn't make a good long-term choice, and it won't offer as good an effective throughput. Most V.32 modems today offer both V.42/42.bis AND MNP5 data compression.

Second, the issue of compatibility. V.32 is the only true, widely recognized, international standard for full-duplex 9600 bps transmission. HST, PEP, Hayes Ping-Pong, CompuCom and others are proprietary in nature. They will "talk" at high speed ONLY with another modem of the same type. When you dial incompatible modem types, you'll receive a 2400 bps connection at best. For some time, people were driven to proprietary technologies for reasons of cost. The proprietary technologies still cost less, but you're tied into high speed connections to modems ONLY of the same type. This is no real bargain any longer.

Third and last, be a wise consumer. When shopping for V.32 modems, look around. Do you recognize the brand name? What kind of warranty is offered? Where must the modem be sent for service in the event something goes wrong? What type of technical support is offered? Can you return the modem for a refund if you're unhappy with its performance? You don't have to trade these things for price. Many modems, such as the Practical Peripherals 9600 SA, offer excellent warranties, support, common standards including V.42bis - all at a price under \$450 ("street" price). You'll find other recognized brands with the same basic features in that price range as well. Shop carefully.

In summary, V.32 modems ARE more expensive than some of the alternatives, but you get what you pay for. If you do significant amounts of long distance file transfer, you may be able to recoup the cost of a V.32 modem just from your phone bill savings alone. In any case, the performance of a V.32 modem can't be beat. Remember - 9600 bps is FOUR TIMES faster than 2400 bps, EIGHT TIMES faster than 1200 bps, and if you're still in the era of yesterday, that's THIRTY-TWO times faster than your 300 baud relic.

The next generation of modems incorporate a new CCITT standard, V.32bis. This is an extension to the basic V.32, and provides 14,400 bps

full-duplex data transfer. V.32bis isn't yet a formally approved standard, but it's expected to be approved soon with little or no changes. For that reason, some modem makers have begun to manufacture and sell V.32bis modems. USRobotics was one of the first to market such a modem, and in fact, they no longer sell plain V.32 modems. All their V.32 modems now incorporate V.32bis as well. Some other manufacturers, such as Forval, have also begun shipping V.32bis equipment. Rockwell already has V.32bis modules available to manufacturers in quantity, so it's likely we'll see more V.32bis entries soon.

V.32bis won't become a real issue for at least another year. At this point, many manufacturers are scrambling to get a V.32 product out the door, let alone V.32bis. Still, V.32bis offers ONE AND A HALF TIMES more throughput than a plain V.32 modem, churning data down the phone line at an alarming pace. To put this in perspective, a 250K file would take over 17 minutes to transfer at 2400. The same file would take a little over 4 minutes at 9600 bps, and UNDER 3 minutes at 14400 bps! Even at the cheapest 12 cent per minute night/weekend long distance telephone rate - that's a \$1.78 difference in long distance costs - for one file.

If a high speed modem is in your future, shop carefully and compare prices and features, bearing compatibility in mind. If you're still at 2400 bps or less, you won't regret the move.

INTERNET NEWS

INTERNET NEWSLETTER INTRODUCED

John S. Quarterman's *The Matrix, Computer Networks and Conferencing Systems Worldwide* gained some acclaim by providing a good overview of the world network of computer networks, described by Quarterman as The Ma-

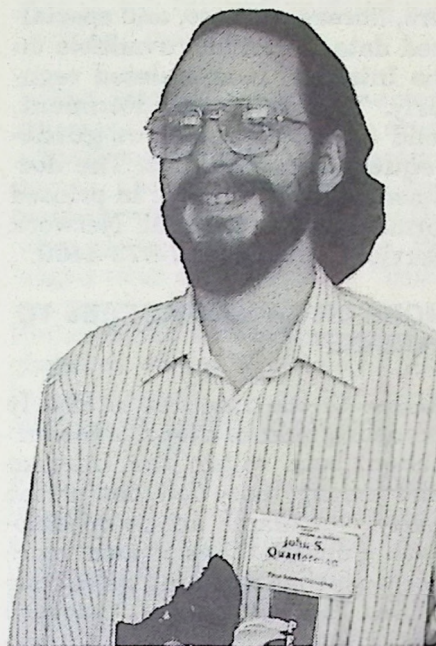
trix. Digital Press published the book in 1989 as a somewhat pricey (\$49.95) niche publication. To their surprise, it has sold quite well, largely by word of mouth, among an increasing population of people interested in Internet, NSFNet, and plying the wires worldwide in general. Digital Press, 12 Crosby Drive, Bedford, MA 01730; 800-343-8321

Quarterman comes by his knowledge of Internet honestly. After graduating from Harvard in 1977, he began working on the government's Defense Advanced Research Projects Agency Network (ARPANET) while employed by Bolt, Beranek, and Newman (BBN), a consulting firm that still provides valuable services to the Internet. ARPANET was the result of a project in connecting a series of computer networks in what was termed an "internetwork". This gradually came to be known as the "Internet" with a capital "I." In 1982, he joined the University of Texas at Austin in their computer science department on various Unix, TCP/IP, ARPANET, UUCP, and Usenet projects. He subsequently started Texas Internet Consulting with partner Smoot Carl-Mitchell to provide networking consulting services.

This past April, Quarterman's introduced Volume 1, Number 1 of *Matrix News* a monthly newsletter covering the general rubric of computer networking. The journal appears to be headed toward a focus on the Internet, the National Research and Education Network (NREN), NSFNet, and like issues. Published monthly, the newsletter is priced at \$30. Matrix Information and Directory Services, 701 Brazos, Suite 500, Austin, TX 78701; 512-320-9031 voice; 512-320-5821 fax.

EXPLORING INTERNET

Once you do gain access to Internet, it will strike you that you haven't done much. Your first logon will result in a system prompt in your "home" directory. This is a directory on a Unix system. You



John Quarterman

can store files there, and you will usually be allowed a certain amount of storage on the system at no extra charge. You're now in the world of UNIX. And you are facing the equivalent of the DOS command prompt.

The best way to get started is pick up a book on basic UNIX commands. They are not all that different from DOS. You can list directories, change to another directory, copy files, etc. There is an atrocious editor called vi you can use to abuse yourself no end. But access to Internet is just a couple of commands away.

Internet is basically an enormous collection of systems offering various services. If you know how to access them, you're in the game. If not, you're staring at a Unix system prompt. While there are a few books on Internet, there is no "User's Manual" covering everything you can do. Surprisingly, however, almost everything you want to do is quite well documented somewhere. But tracking down the pieces of documentation can be quite a treasure hunt.

The heart of Internet documentation is the Request For Comment (RFC). Anyone can submit an RFC by simply sending it to Jon Postel via e-mail at Postel@ISI.EDU. There is something of a review and correction process but if it is deemed valuable, it is placed in an RFC collection maintained by SRI International Network Information Center, 333 Ravenswood Ave., Menlo Park, CA 94025. The full collection of RFCs is available electronically on two systems: The Defense Data Network Information Center at nic.ddn.mil and the CSNET Coordination and Information Center maintained by Bolt, Beranek, and Newman (BBN) Systems and Technology Center in Cambridge. Both services allow full access to anyone with an interest in RFCs.

The first RFC you will want to obtain is the index listing other RFCs. On the DDN system, simply send an e-mail message by entering mailservice@nic.ddn.mil. In the subject field, put **RFC:RFC-INDEX.TXT**. The body of the message doesn't actually have to have anything at all in it. The index will be returned to you by e-mail.

We found the CSNET system a bit faster and easier to use. Send e-mail addressed to info-server@sh.cs.net. You don't need to enter anything on the subject line. On the first line of the message, enter **REQUEST:RFC** and on the next line enter **TOPIC:HELP**. Then end the message. A help file will be returned to you containing an index of all available RFCs and how to request them. There are some twelve hundred odd RFC documents. But you will likely want to start with something like **RFC1118, Hitchhiker's Guide to Internet** by Ed Kroll of the University of Illinois. It details what Internet is, where to get more information, who runs what within Internet, how to use mailing lists, and so forth. **RFC1206 - Questions and Answers for New Internet Users** is also good as well as **RFC1175 Where to Start - A Bibliography of General Inter-**

networking. You can request these RFC just as you did the index by again sending e-mail to

mail info-server@sh.cs.net

Subject:

REQUEST:RFC

TOPIC:RFC1206

TOPIC:RFC1175

All the requested RFC should be in your mailbox the next day.

You don't really need to be on Internet to request such information. Since it is passed by e-mail, you can get it just as easily from CompuServe or MCI Mail. On MCI Mail, enter

TO:CIC(EMS)

EMS:Internet

MBX:info-server@sh.cs.net

REQUEST:RFC

TOPIC:RFC1206

On CompuServe, at the > address prompt:

Internet:info-server@sh.cs.net

REQUEST:RFC

TOPIC:RFC1206

You can spend most of the next few years requesting RFCs and poring over them. They describe not only general information about getting started in Internet, but in some cases very technical information on protocols such as SLIP (Serial Line Internet Protocol).

Another good place to get information for starting up on Internet is Usenet News Groups. You read news groups normally using the read news program from the command line. One excellent place to start is with the news group news.announce.newusers.

Simply enter rn news.announce.newusers from the command line. This group provides answers to a lot of questions continually asked by new Internet users. Another good news group is news.lists, which lists all the other 2000 news groups currently available for reading.

Finally, an excellent document is available online titled the Internet Resource Guide. This docu-

ment lists Super Computer centers, library catalogs, and specialized data collections available on the Internet. It is updated regularly. To obtain this document, send e-mail to resource-guide-request@nnsf.net. The document is also available in printed form by calling the NSF Network Service Center at 617-873-3400.

MORE ON GAINING ACCESS TO INTERNET

Access to the Internet is clearly becoming more of a topic of conversation, both within the Internet and among those left out of the party. Our March article on Colorado SuperNet has drawn more response than anything we've done in the last six months. Colorado SuperNet provides access to Internet for individuals, high-tech companies, and educational institutions at a reasonable cost. At the lowest level, it provides 9600 bps dial up access to individuals for \$2 per hour with a \$20 monthly minimum. But Colorado SuperNet's main mission is to provide such access to those who reside in Colorado. After our article, they've apparently been receiving calls from interested parties from around the nation. Clearly, there is a market demand for Internet access.

And with good reason. Internet does have some drawbacks. The interface is very poor and it is NOT a good place for novices to the online world to make their first tentative steps. Documentation of the network is actually pretty good - it's just scattered. Pieces of information are stored all over the network - much of it superbly done, just difficult to locate.

But we have found Internet to be the world's largest electronic bulletin board system bar none. It makes CompuServe, GENIE, and Prodigy combined look like a single line RBBS system with nobody home. Even better, it is actually made up of LOTS of systems - small and large - with a very refreshing culture quite different from that of a corporate commercial online offering.

The definition of Internet is a bit problematical. We have had a number of knowledgeable people quote us chapter and verse as to specifically what it is, read several books held in the highest esteem, pored through very official Request For Comment documents by the dozens and frankly we've come to the conclusion that anything we make up to define Internet is about as correct as anything we've read. The definitions are terribly conflicting. Each "authority" we've spoken to personally has given us their definition and assured us that we were confused, there was no ambiguity in definition and now we could know for sure. The problem was that rarely did any two such definitions match.

Purists argue that the Defense Advanced Research Projects Agency Network (ARPANET) was originally, and historically THE INTERNET and everything else is something else. The problem with this is not only that ARPANET is phasing out, but also has to do with what ARPANET was. ARPANET was an experiment to network networks. They started with a few, and added more to the net as they went along. The element that bound them was the Department of Defense inter-networking protocol suite known as TCP/IP (Transmission Control Protocol/Internet Protocol). At what point a network, connected to ARPANET by TCP/IP, came to be considered NOT a part of the Internet is still unclear. We will refer to "the Internet" as a global collection of local and regional networks internetworked via TCP/IP. This is handy because all systems connected by such protocol can in theory be accessed by the Unix programs telnet and ftp across the network - providing a real-time access to that system. So we like the concept of an Internet where all machines have real-time access. Within Internet, you can "logon" to any machine on the Internet that gives you permission to do so.

There is a further development known as the Domain Name System (DNS). DNS is a relatively recent development giving Inter-

net a hierarchical and manageable means to address e-mail. Along with some other technical developments, DNS has allowed connection of networks such as BITNET and DECnet, which clearly do NOT use TCP/IP, to be connected to Internet for mail purposes. So while it is not possible to directly connect to such systems in a real-time fashion, they are connected to Internet in a store and forward fashion allowing bi-directional e-mail. At this point, CompuServe, MCI Mail, SprintMail, and AT&T Mail all have mail access to Internet. Internet, plus all the systems that can be accessed for mail from Internet, could be considered a Metanet, or as John Quarterman refers to it, **THE MATRIX**.

There are four basic services on Internet analogous to the BBS world. Telnet, FTP, Mail, and Usenet News Groups.

Telnet is a Unix program that allows you to logon to remote systems and databases. This is very much like logging on to a BBS. Many systems on the Internet allow very limited outside access to their network. But a small minority allow other Internet callers to logon to their services and access information databases and so on. Although this is a very small minority actually, out of the total number of systems on the network, it still winds up being a number in the hundreds or even thousands. Over a hundred University and public libraries allow telnet access to their card catalogs - including our own local Colorado Alliance of Research Libraries - C.A.R.L. C.A.R.L. provides over 4 million citations to various books and publications online and is arguably the largest online card catalog in the nation. They provide dial up access at 2400 bps at 303-863-1350. But you can gain 9600 bps access or higher from any Internet site by entering the command **telnet pac.carl.org**. One of their databases, incidentally, is an **Internet Information Database** compiled by BBN Services of Cambridge Massachusetts. You can enter a searchword

and find a wealth of information on almost any Internet regional network and many sites.

Telnet also allows you to access systems that allow access to areas containing multiplayer adventure games. Other systems have chat services where you can discuss the news of the day in real time. We logged onto an interesting "BBS" run by the University of Uolo in Finland. Not a lot of it was in English but we don't get to dial BBS internationally at \$2 per hour often so we said hello anyway.

FTP is the File Transfer Protocol program. It allows you to transfer a file from a remote system to your host system into your "home directory". From there you can download the file to your PC using xmodem, ymodem, or zmodem. This corresponds to the BBS file download function. We were surprised at the number of shareware libraries and repositories available. **SIMTEL20.ARM.Y.MIL** seems to be the EXEC-PC of the Internet world providing a large and very well maintained library of shareware programs for the IBM PC. Another absolutely fascinating service is provided by the Ames Research Center and JPL. The **ames.arc.nasa.gov** system provides open anonymous FTP access to a gigantic and fascinating library of graphics files. Currently, they offer over 16,000 photographs from the **Voyager 1** and **Voyager 2** spacecraft including images of Jupiter, Saturn, and Uranus. They plan to add additional images of Neptune from Voyager, and Venus, from the Magellan spacecraft.

To transfer a file, you normally connect with the system by entering a command such as **ftp ames.arc.nasa.gov**. You will be asked for a logon name and you respond with **ANONYMOUS**. The system will notify you that anonymous logons are ok and ask for a password. At the password prompt enter the actual user ID you use on your host system. You really have no anonymity, the term means the system will allow contact from

those who don't have a prearranged account on that particular remote system.

From there, you normally change to the directory of interest using the **cd** command, in this case **/pub/SPACE/CDROM**, to browse the offerings. In the case of these particular space graphic files, you will also need to go to **/pub/SPACE/SOFTWARE** and download **IMDISP56.ZIP**. This file contains programs to decompress the images (average size is 670KB) on an IBM PC and display them. The command **get imdisp56.zip** will transfer the file from the Ames system to your local host. You can then download it later to your PC using ZMODEM, XMODEM, or KERMIT.

Another resource of interest is Usenet News Groups. These act somewhat like Fidonet Echomail conferences on BBS systems. The difference is that there are now over 2000 of them. A program titled **Read News** is used to access them and again the interface is terrible. The first news group you will want to access is **news.lists**. This is an updated index of what news groups are available. Enter **rn news.lists** from the command line and you'll learn what news groups are available. The second news group you want to look at is **comp.archives**. This one provides a couple thousand messages where individuals describe what file collections they have available for anonymous FTP and what the address and directory is to locate them. There are news groups for everything imaginable and some topics you wouldn't consider likely. And the level of discussion, for whatever reason, seems to be a bit more informative and entertaining, and a bit less harsh and confrontational, than we are accustomed to seeing on BBS systems.

And finally, there is mail. Enter the command **mail** and an address and you can enter a message that goes to the recipient. Addressing Internet mail can be very simple, or somewhat complex, depending on who you are sending it to. The move to domain addressing has

greatly simplified the process. You can send me mail by the simple command:

mail jrickard@csn.org.

Others may have addresses forty characters or more long.

What's so hot about Internet mail? It goes EVERYWHERE. You can send mail to users on CompuServe, MCI Mail, SprintMail, and best of all - Internationally. We probably passed fifteen messages between here and the Soviet Union to come up with our tiny list of U.S.S.R. BBS for this issue with at least four different individuals scattered over the country there.

The most stunning thing about Internet mail is how quickly it is catching on. Six months ago I didn't know three people with Internet addresses and two of them couldn't actually tell me what it was without firing up a computer and looking it up in a file somewhere. In the last couple of months, it seems like EVERYONE has an Internet address somewhere and suddenly we're seeing the addresses on business cards and stationary. The MAJORITY of business cards I've seen in the last month have had Internet addresses on them - though a few were penned in by hand.

Why the sudden popularity? There has always been an awkwardness about e-mail deriving from the problem of different people having different e-mail services. If you were on MCI Mail, and I was on GENie, we couldn't pass e-mail. And when exchanging e-mail addresses - even among those active in the online world with accounts on several services, we first had to play an awkward game of twenty questions of "are you on x, are you on y" to find a common carrier. The public e-mail carriers such as SprintMail, MCI Mail, CompuServe, and AT&T have made what appears to be an honest attempt at linking their services through X.400 over the past year or so. But learning all the various addressing tricks was tedious and somehow, if you had an Internet address EV-

ERYONE could reach you there from any of those services. Another element is that the domain addressing used by Internet, as funny as it looks - is memorable. I can easily remember **jrickard@csn.org**. I can also reach almost anyone on the WELL as **name@well.ca.us**. They look strange but they are oddly mnemonic and usually easy to recall. And here's a little secret. The reason I print my CompuServe and MCI Mail addresses on the table of contents in Boardwatch is NOT so our readers can reach me. It's actually so if I'm asked for my e-mail address on those services, I can flip open the latest issue and read it out. I haven't the foggiest notion of what my own magic number is on CompuServe or MCI and as a result, almost never send myself e-mail.

So Internet mail is practically universal, and quite international. Further, there seems to be some sort of emerging "status" attached to Internet addresses. We've noted several people absolutely glowing that they now had an Internet address.

The big question remains, how do you get access to an Internet site. The topic of public access to Internet has been an active one in Internet, continues to be so, and will likely be more so with the National Research and Education Network initiative proposed by Senator Albert Gore. There are actually three NREN bills now making the rounds of Congress and it looks like one of them will pass this session, providing nearly \$2 billion in funding for Internet. At issue among the various bills are who has access to the NREN network and why. Even if there's no congressional action on any of the NREN bills, the Bush administration has already included nearly \$150 million in funding for the Defense Advanced Projects Agency, the Department of Energy, NASA, and the National Science Foundation for network related research and improvements under the High Performance Computing and Communications Initiative for 1992. NREN and Internet quite likely

will be the biggest thing going in the online world for some years to come.

But the debate seems to be going in favor of public access anyway. The National Science Foundation funded a large portion of NSFNet, the data backbone or Interstate Highway of Internet. It also provided grant money for what are variously known as "mid-levels" or "regional networks". If the NSFNet backbone is the Interstate Highway system for data, then the mid-levels are the state highway departments and your driveway largely connects to them. But that grant money has largely been phased out and the midlevels are under some pressure to become "self-supporting". To do that, if they don't want to get into illegal drug sales, they are pretty much motivated to basically sell access to the Internet.

Up to this point, this access has been in the form of quite expensive full links to Universities and large research organizations who pay a flat fee to "belong" to the club. But more of the mid-levels are experimenting with public access by direct dial. And we think this is a very healthy thing. The pricing varies ridiculously at this point. Colorado SuperNet seems like the best deal going at \$2 hourly but CERFNet in California isn't too much off with a \$25 monthly fee plus \$5 per hour although they do demand a stiff \$200 sign up fee. We understand CONCERT is also trying to bring North Carolina online at a reasonable cost. JVNNet was \$200 per month the last we heard and BARRNet in California was also enormously proud of their Internet offering at \$2200 per year. But we hope, in time, that all the services eventually come to some consensus on public access in the sub-\$5 hourly range with some monthly minimum in the \$20 range.

The trick is, of course, to locate the contact information for the mid-level serving your area. We're compiling such a list and frankly, it's not complete at this point. We still have to obtain pricing data and

sign up requirements. But the response to our March story has been such that we're going to show our hand a little early. We promise to put all this in one of our usual tastelessly garish sideways tables in a future issue. In the list below, we try to list the long name of the network, the resulting acronym, mailing address, telephone number, Internet e-mail address for more information, and the geographic region they cover. Again, remember that you can send e-mail requests for information through Internet from CompuServe or MCI Mail as well.

Bay Area Regional Research Network

BARRNet
Pine Hall Room 115
Stanford University
Stanford, CA 94305
(415)725-1790
info@nic.barrnet.net
CA

California Education and Research Federation Network
CERFNet

San Diego Supercomputer Center
P.O. Box 85608
San Diego, CA 92186
(619)534-5087
ftp nic.cerf.net
CA

CICnet Inc.
Computing Center
535 West William St.
Ann Arbor, MI 48103
(313)747-4272
maloff@merit.edu
IL, WI, IN

Colorado SuperNet
Colorado School of Mines
1500 Illinois Street
Golden, CO 80401
(303)273-3471
dcm@csn.org
CO

Communications for North Carolina Education, Research, and Technology Network
CONCERT
MCNC

3021 Cornwallis Road
P.O. Box 12889
Research Triangle Park, NC 27709
(919)248-1404

info@concert.net
NC

John von Neumann Center Network
JVNCNet

PO Box 3717
Princeton, NJ 08543
(609)520-2000
nisc@nisc.jvnc.net
NJ, NY, CT, MA, RI, PA

Minnesota Regional Network
MRNet

Minnesota Supercomputer Center
1200 Washington Street
Minneapolis, MN 55415
(612)626-1888
MN

National Center for Supercomputing Applications

NCSAnet
605 E Springfield Ave.
Champaign, IL 61820
(217)244-8297
network@ncsa.uicu.edu
IL, WI, IN

New England Academic and Research Network
NEARnet

BBN Systems and Technologies Corporation
10 Moulton Street
Cambridge, MA 02138
(617)873-8730
nearnet-staff@bbn.com
New England

NorthWest Net
NWNNet

University Networks and Distributed Computing
UW, HG-45
3737 Brooklyn Ave. NE
Seattle, WA 98105
(206)543-7352
danj@cac.washington.edu
AK, ID, MT, ND, OR, WA

New York State Education and Research Network
NYSERNet. Inc.

165 Jordan Road
Troy, NY 12180
(518)283-8860
info@nisc.nyser.net
NY

Performance Systems International (PSI)
11800 Sunrise Valley Dr. Ste. 1100
Reston, VA 22091
(703)620-6651
info@psi.com
National

Texas Higher Education Network
THEnet

Commons Bldg. Room 1.156A
Balcones Research Center
10100 Burnet Road
Austin, TX 78758
(512)471-2444
info@nic.the.net
TX

Southeastern Universities Research Association Network
SURANet

Computer Science Center
University of Maryland
College Park, MD 20742
(301)454-5434
suranet-admin@noc.sura.net
DC, AL, DE, FL, GA, KY, LA, MD, MS, NC, SC, TN, VA, WV

Advanced Network and Services
ANS

100 Clearbrook Road
Elmsford, NY 10523
(914)789-5308
National

UUNET Communications Services

3110 Fairview Park Drive Suite 570
PO Box 2324
Falls Church, VA 22042
(703)876-5050
uunet-request@uunet.uu.net
National

PSI and UUNET have actually specialized in commercial access to Internet as well as other commercial networking applications, for some time. Internet technically has usage restrictions barring commercial use per se. All traffic over the NSFNet backbone is supposed to be research/education related. While enforcement has been a bit loose, companies who want to send invoices, electronic payments, and business related communications legitimately have been in an awkward position. PSI, UUNET, and CERFnet recently announced a service that while it

interconnects with Internet, it bypasses NSFnet between the three of them - effectively establishing a commercial data backbone as an alternative to NSFNet. The three claim that between them they provide 80% of the commercial connections anyway and now those companies can pass business related traffic over this commercial backbone. And all three provide both Internet, and their new commercial backbone service more or less on a national basis. While you may wind up a long distance call from the nearest dial up location, they will generally accept applications from anywhere.

The remaining mid-levels tend, for various reasons, to want to observe a gentleman's geography agreement with regards to serving those in their own areas and not competing with another mid-level. Since the online world overall specifically and at times pointedly ignores physical geography, this is just too quaint to be believed. But there can be a lot of other factors they have to consider. Many receive partial funding from the state governments for example and it can be genuinely awkward to have state tax money used to provide access to those from other areas.

If you are affiliated in any way with a university or community college, you may already have access to Internet without being aware of it. Virtually all Universities have connections at this point and there are those who maintain that the Computer Science Departments have not done a good job of making the remaining faculty and students aware of this. Often, if you are attending school or on staff of a University or community college, all you have to do to get dial up access - at least for e-mail purposes, is ask the Computer Science Department. For the rest, contact the mid-level nearest you and ask them what they have available. Most of these either have active dial-in programs, or have expressed some plans or interest in establishing such a program in the future.

Clearly the Internet is growing at a fantastic rate now. The body of systems on the network has reached a mass large enough to become a temptation to anyone operating a LAN to join the party - just to have world-wide e-mail access. And it would appear that the Federal government may pour about \$2 billion worth of "gasoline on the fire" with the NREN bill. Internet will very likely play a dominant role in our online networking future.

BOOK REVIEW - !%@:: A DIRECTORY OF ELECTRONIC MAIL ADDRESSING AND NETWORKS

by Alan D. Applegate

Boardwatch readers may already know something about the vastness of Internet, as we've attempted to cover this "mega-network" from various angles before. But this same vastness makes it hard to find your way around or to have much of a clue about who and what is available on Internet. One of the more powerful features of Internet - electronic mail - is daunting to use, and figuring out a proper destination address can lead to premature aging. As we've said before, however, there's almost no electronic mailbox that can't be reached through an Internet link.

Enter !%@: *A Directory of Electronic Mail Addressing and Networks* from O'Reilly and Associates. Edited by Donnalyn Frey and Rick Adams, this tome is practically a phone book and map of Internet connections. Its purpose is to serve as a handbook for addressing and networks, targeting primarily those wanting to send e-mail through the worldwide maze of networks. The book lists over 130 of the world's research and educational networks, along with commercial networks such as MCI mail.

The bulk of the book is composed of listings of the major networks in alphabetical order. Each listing consumes two facing pages, with complete facilities, contact, ad-

ressing and architecture information on the left page, and a map on the right page noting the physical connections to the network. For example, the listing for ACSnet - The Australian University and Research Network - lists e-mail, file transfer, remote printing and USENET news are all facilities available; ACSnet uses Internet-style addressing; it's a store and forward network similar to UUCPnet; and linkages come into Melbourne (it's marked on a very nice map of Australia on the right) via X.400 links, BITNET, CSNET, EARN, JANET, SUN III links and UUCP. (You can find the other networks listed in the book as well.)

Probably the single most useful portion of the book is *Chapter 1 - A User Introduction to Electronic Mail*. It provides an introduction to e-mail message formatting and addressing, complete with examples and thorough, easy-to-understand text. If you find yourself overwhelmed by the complexity of Internet, UUCP, BITNET or X.400 addressing, this section of the book will clear your mind. In my case, I find my mind repeatedly reclogged by Internet addressing, so I've found myself referring to it over and over. This chapter was especially helpful when I needed to convert a UUCP-style address to an Internet-style address in order to send an outbound message. Its explanation of the concepts of multi-level domains was insightful.

The appendices are also infinitely interesting, if not useful. A listing of domains by various criteria (the lists are sorted by country, then repeated, first by system name then by domain name) I found that Symbion Videnformidling in Denmark could be reached by the domain "symbion.dk", and that Ford Motor Company's domain is - appropriately enough - *ford.com*. Hundreds (thousands?) of domains are listed. Domains aren't specific addresses - you still need the specific mailbox name of your desired recipient on the host computer carrying that domain. Still, it's fascinating to see how interconnected our world really is.

The book does outline some standard conventions for things, one of which I found particularly interesting - you can usually send a message to "postmaster" at any of the domains, and reach a system administrator. This would seem to suggest that I could send a message to **postmaster@uswest.com** and ask for the e-mail address of my buddies at the phone company (although I haven't tried it).

Bound into the back cover is a pocket guide tear-out card for all you "e-mail heads" out there who wouldn't be caught with your addressing pants down when on the road. The pocket guide lists all of the networks shown in the book, along with their e-mail addressing style.

!%@: A Directory of Electronic Mail Addressing and Networks is one of the few books I've seen with an upgrade program for new versions. Just be sure and send in your postage-paid registration card, and you'll be able to buy the next update at 25% off.

The book is somewhat hard to find and you may need to order it, but it's worth the price if you're serious about Internet electronic mail. **!%@: A Directory of Electronic Mail Addressing and Networks**, 444 pages, \$27.95, ISBN 0-937175-15-3. O'Reilly and Associates, 632 Petaluma Ave., Sebastopol, CA 95472; **uunet!ora!nuts** e-mail, 800-338-6887 voice.

BOSTON COMPUTER SOCIETY TO JOIN INTERNET

by Adam Gaffin

The Boston Computer Society plans to give small non-profit agencies (and possibly small businesses) in Massachusetts access to the kind of networked computing power big companies have long taken for granted, by setting up a Unix-based conferencing system tied to the Internet research network.

The society has already committed at least \$10,000 and hired a networking expert part-time to develop the new system, which will center on a donated copy of Caucus conferencing software and which will be called **Mass. Online**.

Miles Fidelman, the Bolt, Beranek and Newman expert hired to put the project together, says he hopes it will go online later this year.

By tying the non-profits to the network used daily by thousands of high-tech and university researchers and employees, **Mass. Online** could help create a new social dynamic, he says.

"In Massachusetts, we make a big deal about our professional and high-tech community, most of which is on the Internet," he says. "You've got this huge resource of people out there at the end of a wire, who may be eager to help

their community but who simply have limited time. With a networked PC or workstation already on their desk, though, they could prove to be a valuable resource for non-profit groups," he says.

Fidelman says a key phase of the project will be training the people who would use the proposed systems. Although powerful, conferencing systems can be confusing even to people who know their way around a computer bulletin-board, let alone people who work in small volunteer agencies that may not have computers. He says the computer society already has an active program aimed at getting computer equipment donated to non-profit groups and that he would expect society members would pitch in to help group workers learn their ways around any system.

EASY STREET BBS INFORMATION SERVICE

A MULTI-USER - 24 LINES & GROWING!

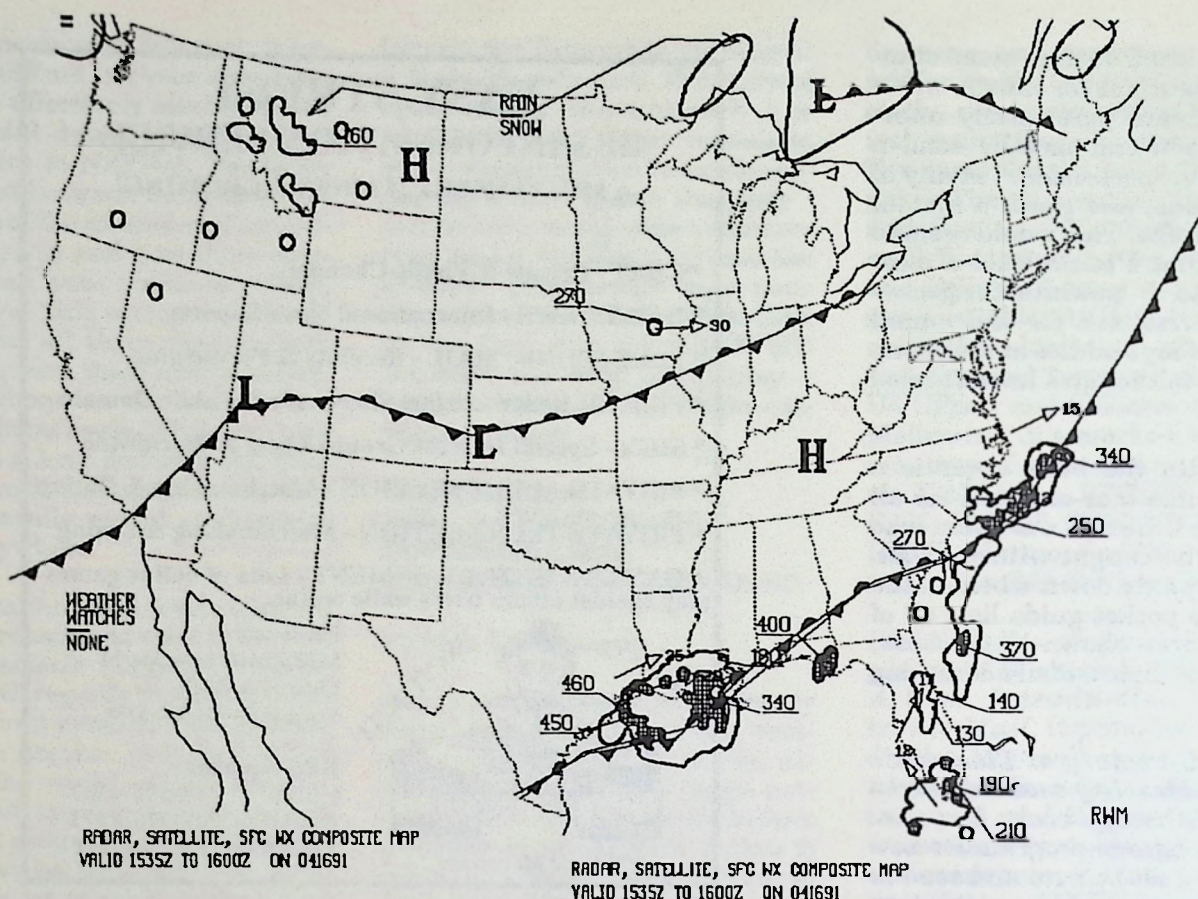
- * CHAT - Private & Public Channels
- * DAILY NEWS - International News Reports
- * ELECTRONIC MAIL - Receipts & Forwarding
- * FILE LIBRARY - 20,000 Shareware & Public Domain
- * SIG's - Special Interest Groups Local & Worldwide
- * PRIVATE ADULT SECTION - Matchmaking & Dating
- * PRIVATE TEEN SECTION - Matchmaking & Dating
- * GAMES & ENTERTAINMENT - Lots of online games play against others users while online.



Easy Street
5670 Schaefer Ave Ste. M
Chino, CA 91710
Voice Help 714-590-5734

BBS Numbers
Chino 714-590-4307
Anaheim 714-778-5473
Placentia 714-528-3771

VISA and Mastercard



There has been some grumbling among BCS membership over the money the society has already committed to Mass. Online. Some in the ranks question doing this when funding for the bulletin-board systems the society already runs is only being guaranteed for six months this year. The Boston Computer Society, 188 Needham Street, Suite 230, Newton, MA 02164; 617-964-2547 voice; 617-964-7702 fax.

PILOT'S WEATHER SERVICE ONLINE

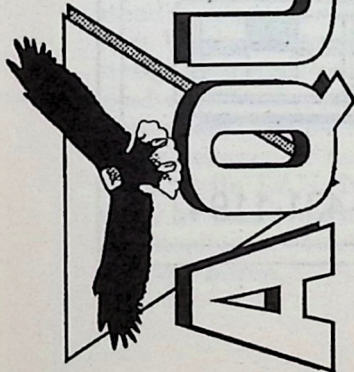
Jeppesen Data Plan Inc. offers national weather service data online with several notable features. The weather data includes depictive maps that can be viewed on screen or printed out on your printer as well as the usual all-capitals print-out of national weather service data.

Several elements make the JEPP/LINK service notable. It is available via low cost X.25 packet switching networks including CompuServe's network and Tymnet. They also offer an 800 number direct dial at 800-767-7000 (7E1). Further, while the service can be accessed using any terminal program, map data really requires an associated terminal program. JEPP/LINK not only provides this terminal software at no charge, but it is available online on many BBS systems.

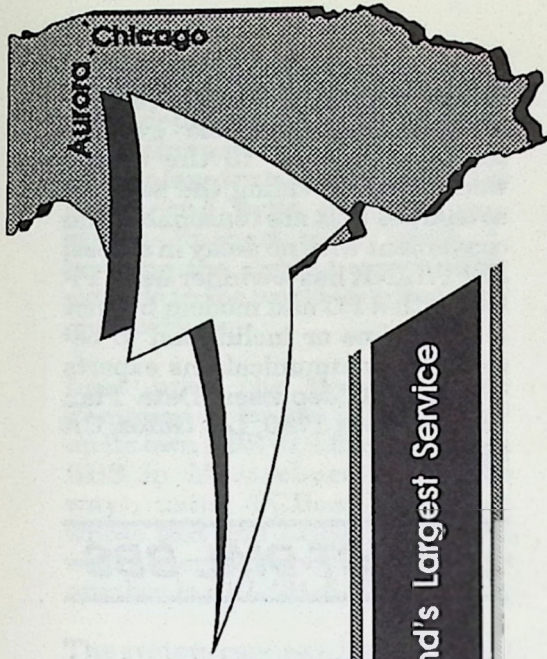
Version 1.2 of the terminal program comes in the file JEPLNK12.ZIP. The file is currently available on the Boardwatch Online Information Service as well as many other BBS. But JEPP/LINK will also mail a copy to anyone who calls at 800-553-7750.

The software features an excellent installation program, online documentation for both the service and

software, and overall it is very easy to use. It found and correctly installed our modem and VGA screen. Most impressive, it asked us for our area code and exchange and actually located the local CompuServe access number from an internal database. If it guesses incorrectly, you can obtain your local CompuServe access number by dialing 800-848-8199 or Tymnet local access number at 800-336-0149. Access by CompuServe or Tymnet is 20 cents each minute and 800 number access is charged at 30 cents. There is a \$3.50 monthly minimum charge but it is only applied if you use the service during that month. Online sign up by Master Card or Visa is quite straight forward and you can use the service immediately. The service asks for a logon ID. Enter "F" to sign up as a new user. The combination of easy to get, free terminal software and quick online sign up and access were impressive.



AQUILA BBS



(708) 820-8344

Chicagoland's Largest Service

What Is Aquila BBS?

Aquila BBS is the Chicago area's largest telecommunications service and Electronic Mail Center. Offering a host of services organized and well maintained for the user since 1988.

Easy To Use

Aquila BBS is colorful, reliable and very user friendly. Novice users will find most commands are 1 or 2 letters and very easy to remember. A menu of commands is always available along with both on-line and off-line help.

Information

We keep you up-to-date on the happenings at Aquila BBS. Items of special importance to our users are displayed as you log on: system & hardware upgrades as well as future enhancements. Our bulletins area will give you more specific information about the system, subscription rates, the most popular programs available, the current phone numbers, help for new users and other important information specific to Aquila BBS. Our conference areas give you a place to exchange ideas, get hints, help and opinions from other computer users across the country.

On-Line Services

Information from USA Today Decision Line, the nations newspaper is available. As well as Boardwatch Magazine, one of the best modem users reference tools for our fast moving industry. This information is ready for reading on-line or can be downloaded for off-line reading.

Programs

Tens of thousands of programs populate our 3.5 gigabytes of drive space. We offer the latest in shareware, freeware, public domain, demos of the newest commercial programs and thousands of beautifully digitized pictures. These are just a few of the types of files you could find on Aquila BBS.

DOS & System Utilities

PC Diagnostics

OS/2 Utilities

File/Hard Drive Utilities

Printer Utilities

Novel and Lan Utilities

Windows 3.0 Programs

Desktop Publishing

CAD Utilities

Word Processing

Home/Cooking/Health

Humor & Jokes

Genealogy

Astronomy

Music/Midi

Business/Finance/Tax

Database/Spreadsheets

C/Basic/ASM/Pascal

Animations

Arcade/Classic Games

Communication Programs

Conferences & E-Mail

We offer hundreds of conference areas for your enjoyment; general discussion, computer related, venter and specific product support, programming language support and adult related topics. you can virtually have any question answered here and join in on lively discussions with people from across the country.

We also publish our own "E-Mail Directory" that is sent to all that drop in for a visit. This report lists all our conferences by category and gives a brief description of the topic of each conference. The QMail Door and Mark Mail Doors are also available to help you get the most of these areas.

Subscription Information

Aquila BBS is user supported. We offer access to new callers to explore the wealth of information and services offered here. Feel free to download our latest: conference and file directory listings, and take a look around. We are confident you will find Aquila BBS to be the most diverse BBS in the Chicagoland Area. We offer several membership options starting from \$30.00 to fit your on-line needs. Subscribe on-line with your Visa/MC/Amex for instant access! Or mail check/money order with your name and password to:

Aquila BBS

4430 East New York St. Ste. 201

Aurora, IL 60504

Set Your Modem at 8 data bits, No Parity, 1 Stop Bit

Aquila prices and specifications subject to change without notice.

The service itself provides weather data for all areas of the country, a wide variety of weather maps, and some impressive flight planning calculators. All data can be logged to the disk for later viewing, viewed online, or printed out to a printer. The program works superbly with any HP Laserjet compatible printer.

The maps of course are the reason to use the terminal software. When you select a map from a menu, it automatically downloads to your system where it is saved on disk, displays on the screen, and if you want, prints out on your printer as soon as the screen display is completed. The maps are informative, seem to be well designed for pilots, but were visually not terribly impressive. We've seen more attractive maps from other weather services. But aside from wow appeal, the software/service combination made them very easy to obtain, printout, store, and use and if

you're after weather data rather than eye-candy, the process is very easy to use.

The flight planning calculators for pilots were very easy to use. We entered a departure point of DEN for Denver, a destination point of STL for St. Louis, our time of departure. The service also asked if we wanted to manually enter wind data or use forecasts from the weather service in the calculation. We also entered a flight speed of 260 knots and a fuel rate of 9 gallons-per-hour.

The resulting calculation was pretty impressive. It indicated our true distance would be 678 miles, a travel time of 2:29 with a true airspeed corrected for winds of 234 knots. We would burn 22 gallons of fuel getting there. It made me wish I actually had an airplane or knew the first thing about flying one.

JEPP/LINK offers nothing notable in National Weather Service data you can't get elsewhere and the

maps are handy if underwhelming. But by making the software easy to obtain, install, and use - even for complete novices to the online world, and providing the services at charges that are reasonable and convenient with no delay in access, JEPP/LINK has a winner here. Pilots with a PC and modem but not a lot of time or inclination to become PC communications experts will love it. Jeppesen Data Plan Inc., P.O. Box 1780, Los Gatos, CA 95031.

DIRECT DIAL BBS

MASSACHUSETTS COMMISSION FOR THE BLIND BBS

by Adam Gaffin

Speech synthesizers open the world of computing up to the blind. Because these devices can read ASCII and translate that into a

WHY GO WEST? WE'RE NEW YORK'S BEST! THE INVENTION FACTORY BBS.

44 PHONE LINES MEANS NO BUSY SIGNALS.
OPERATING 24 HRS. PER DAY SINCE 1984.

Easy to use PCB bulletin board software.

Up to eight hours daily access time.

30,000+ ZIPPED files - Over 100,000 individual files with no duplication.

Free down loads for first time callers.

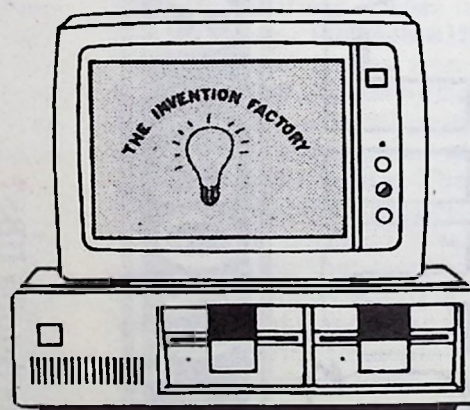
New files scanned immediately for all known viruses.

Informat magazine published on-line weekly.

200+ Interlink and Smartnet special interest conferences.

Interactive on-line games.

Hayes, USR and Compucom high speed modems.



TO BROWSE THE SYSTEM AND REGISTER ON-LINE CALL 212-431-1194.

simulated voice, they let the blind and visually impaired manage their finances, dash off letters, even play text-based computer games and write computer programs - in short, pretty much everything the sighted can do. This extends to the world of online communications.

Last June, the Massachusetts Commission for the Blind started up its own BBS (the first state-run BBS in Massachusetts, by the way), using PCBoard software whose text and ANSI codes mesh with a user's voice synthesizer. The number is 617-451-5327.

The system carries a large number of text files of concern to the visually impaired, such as copies of the federal Americans with Disabilities Act and relevant state statutes. There is also a job database that lets the blind, who cannot read the daily paper, compete with their sighted counterparts, as well as various household and computer-management files for downloading.

But the system is not all business. There are several doors that feature games and fun information. For example, many blind people have police scanners. But figuring out which frequencies to lock into can be difficult because there are no Braille translations of the books that list frequencies. So the BBS has a database that lets users put in their favorite frequencies and search for others. There is also an online dictionary and games aimed at teens.

The BBS was the idea of Charles Crawford, the head of the commission, who is visually impaired himself. Since he "discovered" computers four years ago, Crawford has steadily computerized his commission. Workers communicate extensively by e-mail on a commission local-area network. The commission recently added a fax board and optical-character recognition software to its LAN. Now, Crawford says, he can read and respond to fax messages - even calling them up from home.

Crawford says the commission hopes to begin experimenting with tying the BBS to a CD-ROM drive, which could offer callers access to vast amounts of information and programs - if the commission can find anybody willing to donate the CDs, since there is no money in the budget for them.

Crawford has also become an accomplished dBASE programmer - he even wrote several of the doors and programs on the commission BBS.

But Crawford says he is worried about the future, ironically because of the growing importance of graphical user interfaces (GUIs), which are supposed to make computing easier.

Because they rely so heavily on graphics and mice, rather than on the ASCII and command-line instructions that drives speech synthesizers, GUI-based programs and systems start out as a serious impediment to the blind.

Worse, more and more programs are being written exclusively for GUIs, Crawford says.

"In a sense it's like having built a bridge between access and no access and now somebody puts a land mine at the bottom and it's ticking," Crawford says.

Crawford says a number of companies, including IBM, are looking at how to adapt GUIs for use by the blind, but that the pace of research is far slower than the pace at which GUIs are taking over the personal-computer market.

But he says he is confident something will happen eventually - either because the software industry voluntarily comes up with a GUI-to-voice-synthesizer standard, or because it is forced to by legal action under the Americans with Disability Act.

Crawford says one hope is Unicode, a new attempt to create a sort of mega-ASCII encompassing the characters of all the major languages, including Chinese and

Japanese. It should not be too hard to include an additional set of codes or instructions in there that could translate mouse-type commands or icons into a set of instructions a voice synthesizer could deal with.

[Adam Gaffin writes a computer column for the Middlesex News in Framingham, Mass., where a version of this article originally appeared - Editor].

EXEC-PC INTROS CHAT SERVICE

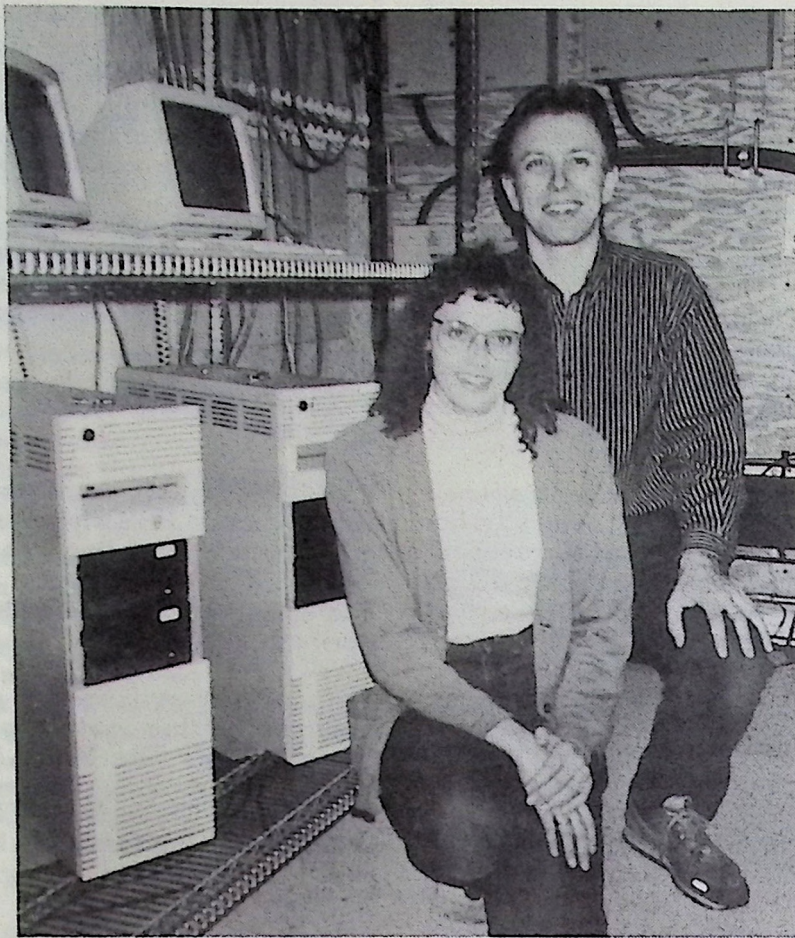
EXEC-PC, by all accounts the nation's largest BBS with over 200 incoming telephone lines, has inaugurated an experimental chat line service at 414-789-4400 on April 4th, 1991.

The new service, operating on a separate 32-line system using Galaticomm's The Major BBS software, allows online interactive chat service. Throughout EXEC-PC's history, it has focused on business shareware program downloads. But during the past year or so, an online message system was added which proved popular and the separate chat line service addition is somewhat natural.

The service is priced at \$20 for 200 hours online. Existing EXEC-PC subscribers (\$60 annual access) automatically receive 10 hours free usage. Anyone who calls receives a demo account allowing a good browse about the system.

Chat line services comprise their own world. Many individuals enjoy live interaction online with the anonymity of the keyboard/screen interface. And it's one of those things you either "get" or you don't. I confess, I've always been a little bit lost.

Galaticomm's THE MAJOR BBS software includes a series of action macros that allow callers to hug each other, blush, sneeze, and so forth. Our observation is that these tend to be a bit overused with callers snorting, giggling, hugging and caressing each other, etc. to the point that little in the way of



Bob and Tracy Mahoney - EXEC PC - 218 Lines

conversation actually occurs. But again, those who like these services are quite enthusiastic.

Bob Mahoney started EXEC-PC in 1982 in an apartment bedroom in Wisconsin. The system has grown steadily since then and received its **three millionth** telephone call on October 19, 1990. They expect to receive the four millionth call about the same time this year and will award a V.32bis modem to whoever makes it. Today, the system offers 181 dialup lines plus the 32-line chat system for a total of 213 incoming telephone lines. They are currently receiving over 3300 calls daily and subscribers who pay a \$60 annual subscription fee download 565,000 files monthly from the 7 Gigabyte storage area. Slightly over 50,000 IBM programs are available on the system. The new chat service operates at 414-789-4400 while the main

system is available at 414-789-4210. EXEC-PC, PO Box 57, Elm Grove, WI 53122,

COMM-POST BBS - ASTRONOMY ONLINE

by Alan D. Applegate

As a Sysop myself, I have remarkably little time to be calling around to other BBS on a routine basis. But if there's one system I call regularly above all others, it's got to be Brian Bartee's **Comm-Post BBS** in Denver, Colorado.

Bartee has been running the Comm-Post since 1986, when it started as a replacement for an older BBS called "Star-Board," an astronomy related system that he used to call regularly, after it disappeared in 1985. The Comm-Post runs on six incoming lines, two of which feature USRobotics' HST modems (one of those being a Dual Standard with V.32 compatibility).

eSoft's TBBS and TDBS is the software behind the operation. Line capacity is increasing this summer, with at least two more lines being added.

Although its extensive shareware file libraries are actually the main "draw" to the Comm-Post today, the system still features a slight astronomy bend. A member of the Denver Astronomical Society, Bartee maintains an astronomy file collection of over 20 megabytes. All the astronomy files are available for download to new users, and there is also a special "astronomy access level" for qualified individuals.

The system has available one of the top ten shareware downloads according to Shareware Magazine - SkyGlobe. This shareware package is a "planetarium" program, meaning that it displays an accurate representation of the sky above for your particular location and date. It comes with data tables for years through 1992, and has direct coordinate support for dozens of major and mid-size cities that you simply "point and shoot" to select. The program then displays a high-res color sky view that automatically increments slowly, representing the changes in the sky over time. You can modify the display speed (or stop it), increase or decrease brightness (how many stars are or are not visible), change the viewing angle (which direction you'd be facing when you look up) and pitch (how far back you'd be tilting your head) and control many other aspects of the display with a simple "increase/decrease" keypress scheme. Look for **SKYGLOB2.ZIP** online.

Comm-Post features what I personally feel are the most tasteful ANSI menus anywhere. The colors blend aesthetically instead of jumping off the screen at you, and the designs of the menus are simple yet pleasing. All the menus follow the same basic theme and color scheme, but the physical shapes and sizes vary depending on which menu in the system is being displayed. Bartee's intelligent menu design means you don't spend half

your life waiting for the menus to paint on the screen, a welcome change from a lot of systems. A simple hot-key toggle on the Main Menu allows you to turn the graphics screens on and off easily.

The layout of Comm-Post is vast, yet easy to follow. One of my favorite elements of the system is that there are lots of things to "tinker" with and look at online. You won't easily get bored with the system, that's for sure.

One section, titled blatantly enough "Time Wasters," is a fun collection of miscellaneous goodies. Featuring daily quotes, a day-oriented keno game (for daily callers), randomly generated "psychic predictions," useless facts, today in history and more, this is a great place to goof around in. The section also features a selection of TDBS-based online games.

Comm-Post includes a joke section with three separate message areas. The three areas correspond to fairly clean, somewhat nasty and outright gross jokes. Pick your preference with "dirtiness" and read away...you'll be rolling on the floor (or groaning) with this mixture of Sysop and user posted jokes.

For those that like files, the Comm-Post has plenty. Featuring over 1.5 gigabytes of online storage capacity, this is no small collection. The Comm-Post usually has the very newest in shareware and freeware available, and is my first stop when looking for something in particular. The files are thoughtfully arranged, and are accessible by broad categories or all combined at once. When accessed by category, the areas are broken further into separate groups. This arrangement makes it easy to search the whole system for something in particular, or to head right to your area of interest for the search. If Comm-Post has a file you're looking for, you can generally locate it quickly and without difficulty. Bartee claims that there are over 100,000 files online in over 11,000 archives, all of which are in ZIP format.



It's 8 A.M. Shouldn't you be punching your modem or something?

Reflecting the interests of Brian's brother Roy, the Comm-Post also features an extensive collection of files for the old TI- PCs. Roy has since started his own TI-specific BBS, but the file libraries and message areas remain on Comm-Post.

Bartee has placed an incredible array of equipment online. Running on a 25 MHz 386 machine, the system features no less than four large-capacity hard disks, two of which are ESDI and the other pair being SCSI. The response time of the system while online is excellent, with no noticeable delays detected even when performing a file search.

In past columns, I've mentioned how I really like systems with a homey, comfortable "feel" online. Comm-Post is just another one of those systems that emanates a great warmth and comfort that's difficult to put in words. It's clear that Bartee gives his system a lot

of ongoing attention and care, and possibly that's the very thing that comes across to the user online. In any case, the Comm-Post is a great place to stop by in your modem travels. Costs are \$25 for six months, \$35 for a year, \$75 for lifetime membership, and can be paid by credit card or personal check. Brian Bartee, The Comm-Post, P. O. Box 9601, Denver, CO 80209-0601; 303-534-4646 data.

SOVIET BBS

In our February 1990 issue, we did a story on the first BBS in the Soviet Union - Eesti#1 setup in Tallin Estonia on December 14, 1989 using PCBoard software and a modified US Robotics modem capable of a 1200 bps connection. A year has passed, with many changes in the world of BBSs and many more in the world of the Soviet Union. We thought it might bear a revisit.

BOARDWATCH MAGAZINE UNITED SOVIET SOCIALIST REPUBLIC BBS LIST

TITLE	TELEPHONE	MODEM	FIDONET
Villa Metamorph BBS.....	7-012-720-0228.....	?	-
Kaunas #7 BBS.....	7-012-720-0274.....	?	-
WolfBox.....	7-012-773-0134.....	1200	2:49/10
Eesti #1.....	7-014-242-2583.....	9600/MNP	-
Hacker's Night System #1	7-014-244-2143.....	9600/HST	2:490/1
MamBox.....	7-014-244-3360.....	19200/PEP.....	2:490/40
Space Island	7-014-245-1611.....	2400	-
Great White of Kopli.....	7-014-247-3943.....	2400	2:490/90
XBase System	7-014-249-3091.....	2400/MNP	2:490/40.403
Mailbox for citizens of galaxy.....	7-014-253-2350.....	1200	2:490/30
Lion's Cave	7-014-253-6246.....	9600/HST	2:490/70
New Age System.....	7-014-260-6319.....	2400	2:490/12
Flying Disks BBS	7-014-268-4911.....	2400/MNP	2:490/40.401
Goodwin BBS.....	7-014-269-1872.....	2400/MNP	2:490/20
PaPer.....	7-014-343-3351.....	1200	2:490/70
MESO.....	7-014-343-3434.....	2400/MNP	2:490/60
LUCIFER.....	7-014-347-7218.....	2400	2:490/11
Ozz Land.....	7-017-277-8327.....	2400	-
Post Square BBS.....	7-044-417-5700.....	2400	-
Spark System Designs	7-057-233-9344.....	1200	2:489/1
Nightmare	7-095-128-4661.....	2400/MNP	2:5020/1
MoSTNet 2nd.....	7-095-193-4761.....	2400/MNP	2:5020/4
Kremlin.....	7-095-205-3554.....	2400	2:480/100
JV Dialogue 1st.....	7-095-329-2192.....	2400/MNP	2:5020/6
Wild Moon.....	7-095-366-5175.....	9600/MNP	2:5020/2
Moscow Fair	7-095-366-5209.....	9600/MNP	2:5020/0
Bargain.....	7-095-383-9171.....	2400	2:5020/7
Alan BBS.....	7-095-532-2943.....	2400/MNP	2:5020/11
Bowhill	7-095-939-0274.....	2400/MNP	2:5020/9
Angel Station BBS	7-095-939-5977.....	2400	2:5020/10
PsychodeliQ Hacker Club BBS	7-351-237-3700.....	2400	2:5010/2
Hall of Guild	7-383-235-4457.....	2400/MNP	2:5000/0
Sine Lex BBS.....	7-383-235-4811.....	19200/PEP.....	2:5000/30
The Court of Crimson King	7-383-235-6722.....	2400/MNP	2:50/0
KREIT BBS	7-812-164-5396.....	2400	2:50/201
Petersburg's Future	7-812-310-4864.....	2400	-
The Communication Tube.....	7-812-315-1158.....	2400/MNP	2:50/200

Note: Only Moscow systems with city code of 095 can be direct dialed at this time. To direct dial a Moscow system, dial 10288011 plus the number listed above. 10288 selects AT&T as your long distance carrier and 011 selects international access.

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And indeed it does. The Eesti#1 system has been upgraded to 9600 bps connections. Further, there appears to be some 37 active online services within the Soviet Union. Evgeny Chupriyanov operates a system titled **The Court of the Crimson King** in Novosibirsk at 7-3832-35-6722 using Maximus CBCS Version 1.02 software. Note the format of Soviet telephone

numbers. 7 is the country code, 3832 is the Novosibirsk city code, and the six-digit 35-6722 is the actual number.

The system is 2:50/0 in the International Fidonet Network indicating that he is the International Fidonet Region 50 Coordinator for that area. In his online travels abroad, Evgeny goes by Eric and is

available through the Internet as eric@isi.itfs.nsk.su. His voice line is 7-3832-35-7117.

Serge Terekhov, one of his associates, also publishes a list of active BBS titled **Known Union of Soviet Socialist Republic Bulletin Board Systems**. We've reproduced version 10c of his list, dated March 13, 1991, here.

Novosibirsk is located in the heart of the Soviet Union, in the Siberian lowlands just to the north and west of the Sayan Mountains on the Ob River. This is many hundreds of miles east of Moscow and the political centers we hear mentioned on television and radio. It is almost precisely dead center of the nation going east/west and slightly south of center in latitude.

The system participates in an international education network titled **K12** - part of FidoNet devoted to education issues. Tamara Ovodova, head of the Association of Parents of Handicapped Children in Akademgorodok, Siberia, posted a message in one of the **K12** echomail conferences carried on The Court of the Crimson King in Novosibirsk. Apparently, they have over 100 children with various physical handicaps they are teaching at the local University. They are appealing for aid in their work and dozens of people from across the U.S., Canada, Australia, and Great Britain are responding to the echomail message with various items of hardware etc. to aid them.

During our last visit, we noted that there was no means to direct dial a bulletin board system within the Soviet Union. You had to dial an international operator and let them place the call for you, switching over to data by entering **ATX1D** on your terminal once you actually heard a modem tone. Moscow is now direct dial but anything outside of Moscow, and Novosibirsk certainly qualifies, is a dialing adventure.

Most long distance carriers can't really make this connection so you must use AT&T eventually. To avoid the usual runaround, just dial **102880** to get the AT&T operator from the beginning. And the call requires a bit of setup.

Plug a normal telephone handset into the telephone RJ-11 jack on your modem. Setup your terminal program for **8N1** and the baud rate desired. Type in **ATX1D** on the terminal program but don't press **ENTER** yet. Dial **102880** to get the

operator. Give the operator the number you're trying to reach. You might mention that you are dialing a data number and she should expect a modem tone. When you hear the tone, press the **ENTER** key on your system and the link should make within a few seconds. Carefully hangup the handset - although most modems will disconnect the handset anyway.

The least expensive time to call is between 0200 and 0700 AM MST. There are only a half dozen trunks to the Soviet Union so it is quite common to be notified that all lines are busy and to try your call later.

Dmitry V. Volodin, who can be reached by Internet at dvv@hq.demos.su, tells us the most popular BBS in the Soviet Union is run by Pete Kvitek in Moscow and it's titled **JV Dialogue 1st** at 7-0953-29-2192.



Great news Dear, I've been promoted to office clown.

We're happy to report that at least in the case of Moscow itself, city code 095, you can now dial direct. But even dialing Moscow direct can be an adventure. AT&T remains the best service to use placing international calls and you can use AT&T by dialing their **10288** prefix before placing the call. Following the **10288**, enter **011** for the international switch followed by the country code (**7**), the city code (**095** for Moscow), and the number (**329-2192** in the case of **JV Dialogue 1st**).

Long distance telephone charges within the Soviet Union rose **20%** as of March 29th 1991 an action by the Soviet Chamber of Ministers. There are at least two modem companies within the Soviet Union now with 1200 bps models starting as low as 500 rubles (\$18). We look forward to an increasingly "wired" Soviet Union.

BOARDWATCH LIST OF LISTS

BBS LIST TOPIC	LIST AUTHOR/EDITOR	CONTACT BBS	TELEPHONE
Republic of South Africa.....	Henk Wolsink.....	Catalyst BBS.....	(041)34-1122
Darwin National BBS List.....	Meade Frierson.....	USBBS Update Line.....	(202)547-3037
Maine BBS.....	Eric Rodzen.....	MaineNET BBS.....	(207)767-1273
Astronomy/Space BBS.....	John Pickens.....	Starbase III BBS.....	(209)432-2487
NY/NJ/CT/PA/DE.....	Mike Hefferman.....	Network One BBS.....	(212)628-5486
Southern California.....	Mike Hefferman.....	SOCAL Corner.....	(213)422-7942
Dallas/Ft Worth Area 213/817.....	Kevin Carr.....	User-to-User PCBoard.....	(214)492-6565
Open Access UNIX Sites.....	Eric Rickin.....	LGNP1 (login:GUEST).....	(215)348-9727
Cleveland Area 216.....	Richard Barth.....	Wine Cellar.....	(216)382-2558
Handicapped Issues BBS.....	Phillip Bailey.....	HEX BBS.....	(301)593-7357
Baltimore Area 301.....	Edward Del Grosso.....	Baltimore BBS News.....	(301)633-7870
Medical Issues BBS.....	Horst Mann.....	Black Bag.....	(302)731-1998
Detroit Area 313.....	Arthur Petrzela.....	Tony's Comer.....	(313)754-1131
Engineering Related BBS.....	Mike Labbe.....	Computer Plumber.....	(319)337-6723
Rhode Island Area 401.....	Online Atlanta Society.....	Eagle's Nest.....	(401)732-5292
Atlanta Area 404.....	Rodney Aloia.....	OASIS.....	(404)627-2662
Atlanta Area 404.....	Eric Thav.....	INDEX System.....	(404)924-8472
South Florida Area 305/407.....	Jim Belot.....	Silicon Beach BBS.....	(407)276-3750
Milwaukee Area 414.....	Bob Underdown.....	The Keep BBS.....	(414)372-3488
Arkansas Area 501.....	Lisa Gronke.....	The Gaslight BBS.....	(501)444-8420
Portland Oregon BBS.....	Frank Lemer.....	DawGone Disgusted.....	(503)297-9145
New Mexico Area 505.....	Central Texas Sysop Assoc.....	Land of Enchantment.....	(505)822-8162
Texas BBS List.....	Joseph Caplinger & Son.....	Deep Thought.....	(512)244-1598
Selected BBS.....	James Toro.....	J&J's BBS.....	(513)236-1229
The List National BBS List.....	Dave Schubert.....	PDSLO (The List).....	(516)938-6722
Wisconsin 608.....	Wayne R. Morton.....	JW-PC Dataflex.HST.....	(608)837-1923
South Jersey Area 609.....	Lee Smith.....	The Casino EBBS.....	(609)561-3377
New Jersey Area 201/609/908.....	Dave Goodenough.....	Praedo BBS.....	(609)953-0769
MIDI Music BBS.....	Pete Norloff.....	MIDImaze BBS.....	(615)877-5528
Massachusetts Area 508/617.....	Mike Focke.....	Wyzard's Castle.....	(617)825-3135
OS/2 BBS Systems.....	Richard A. Pence.....	OS2/Shareware BBS.....	(703)385-4325
Washington DC BBS List.....	Frank Atlee.....	Interconnect.....	(703)425-2505
Genealogy Related BBS.....	Alex Draper.....	NGS-CIG.....	(703)528-2612
Desktop Publishing BBS.....	Captain Chet Solace.....	Byrds Nest.....	(703)671-8923
Ontario Area 705.....	Colby Jordan/Peter Anvin.....	Cottage Country BBS.....	(705)835-6192
Amiga BBS Lists.....	David Nathan.....	Exactus Info Service.....	(707)524-2548
Chicago.....	Ron Crowther.....	Stillwaters.....	(708)403-2826
Chicago.....	Larry Honore.....	HURK BBS.....	(708)801-0823
Houston Area 713.....	Roy Timberman.....	Houston Inline.....	(713)522-2408
Central California Area 805.....	Vance Martin.....	His Board.....	(805)652-1478
Kansas City Area 816/913.....	Serge Terekhov.....	Sound Advice.....	(816)436-4516
Tulsa Oklahoman Area BBS List.....		Access America.....	(918)747-2542
U.S.S.R. BBS List.....		Court Crimson King.....	7-3832-356722

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Bucks Telematics 215-493-5242
Yardley, Pennsylvania since 12/83. Sysop: Richard Press, M.D.. Using TBBS 2.1 with 1 line on MS-DOS 80486 with 200 MB storage. U.S. Robotics at 38400 bps. \$3 Monthly fee. Area's premier, full-service BBS with conferences and private messaging. Network "Point" service free to registered users. Enjoy many unique services, online publications and games. Unlimited downloads. No upload requirement. Register online with c-card.

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Pinecliffe, Colorado since 01/84. Sysop: Craig Baker. Using OPUS 1.13 with 4 lines on MS-DOS 80386 with 1200 MB storage. U.S. Robotics at 2400 bps. FREE BBS! (But for \$20/yr get TWO HOURS PER DAY & NO DOWNLOAD LIMIT!) Lots of files, some oddball echomail conferences. Many online games & tournament! Sysop usually available for chat. 9600 bd HST line at (303)642-0703. Come help us grow!

Sound Doctrine BBS 303-680-7209
Aurora, Colorado since 01/87. Sysop: Tim and Mike. Using TBBS 2.1M with 4 lines on MS-DOS 80286 with 200 MB storage. Supra at 2400 bps. For serious Christianity only! Where non-believers can ask the questions their Christian friends wish they wouldn't. Free items can be ordered while on-line. Look for the women's echo called Adam's Rib and our international echos. Find out who equals 666

THE QUARTERDECK (305) 462-1372
Ft. Lauderdale, Florida since 08/90. Sysop: Kelly Hulse. Using TBBS 2.1S with 1 line on MS-DOS 80286 with 500 MB storage. Everex at 2400 bps. \$Free BBS fee. Carrying the PC-SIG on CD-ROM with 400 MEGS., message sections and games. Plus, our Marine Section with Satellite weather imagery of the world for download every day. Many new pictures daily. Watch us grow!

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Chicago, IL. since 06/81. Sysop: George Matyaszek. Using TBBS 2.1M with 7 lines on MS-DOS 80386 with 130 MB storage. Multitech at 2400 bps. \$20. Annually fee. When you want MORE than thousands of files, hundreds of message Echo's or a few dozen phone lines, give us a call. It takes PEOPLE, not hardware or software to make a system what it really is. Find out what the 'Early Days' of modeming are like today.

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Indianapolis, IN since 01/89. Sysop: Doug Scott. Using PCBoard 14.5a/U with 18 lines on Novell Network with 4000 MB storage. U.S. Robotics at 38400 bps. \$45.00 Annually fee. 950 Conferences, 25,000 files, 18 Lines, 65 Online Games, USA Today, Boardwatch, Livewire CB Chat, huge Adult Gif Selection. Member of PC Relay - North Amerinet - Intelec - Vnet - Interzone - Throbnnet. A very fast BBS 2 386-33's and 18 286-16's.

The INDEX System TBBS (tm) (404) 924-8472
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Inferno 408-395-3721
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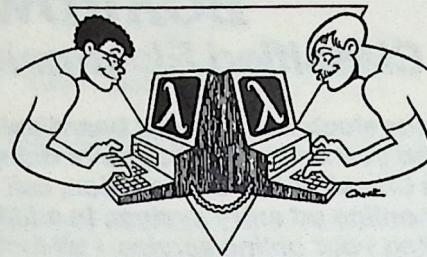
Data Point! (501)442-8777
Fayetteville, Arkansas since 01/83. Sysop: Gary W Funk. Using TBBS 2.1M with 4 lines on MS-DOS 80286 with 260 MB storage. U.S. Robotics at 9600 bps. \$30 Annually fee. Data Point! has multi-line chatting, on-line publications, and multi-player games. Large library of SDN, SDS, and TDN files. Support for MS-DOS and Windows 3.0. TBBS/TDBS/TIMS and TMail support. NetWork, FidoNet, and UUCP message areas.

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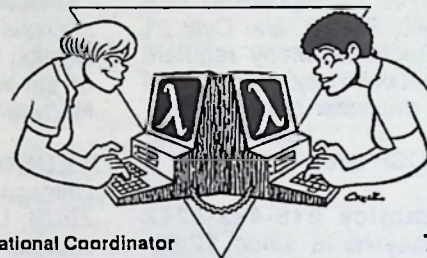
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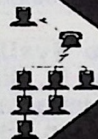
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BOARDWATCH MAGAZINE

NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - MAY 1991

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
ADA 9X Project Bulletin Board	(800)232-9925	ADA Programming Language Revisions and News	Chris Anderson/Susan Carlson	Eglin AFB, FL
ADA Information Clearinghouse	(703)614-0215	Information on ADA Programming Language/Military Specs	Department of Defense	Washington, D.C.
American Cybernetics BBS	(602)968-1082	Multi-Edit Product Support BBS	American Cybernetics	Tempe, AZ
ANARC BBS	(913)345-1978	World Radio/TV Handbook - Short Wave Freq Lists/Scheds.	Assoc. of North American Radio Clubs	KS
Applied Modeling Research RBBS	(919)541-1325	Environmental Protection Agency Atmospheric Models	William Peterson/EPA	Hurdle Mills, NC
Aquila BBS	(708)820-8344	2 GB 14 Nodes Fidonet/Interlink/Metronet M/Ce IL/CHI Graphics	Kevin Behrens/Steve Williams/Chris Babb	Aurora, IL
Ashton-Tate Technical Support	(213)324-2188	dBase and Multibase Support - CIS HOST NAME:ATBBS	Ashton-Tate Corporation	Torrance, CA
AST Technical Services BBS	(714)727-4723	Superb support system for AST Computer Products	AST Research Inc.	Irvine, CA
AT&T Support BBS	(201)769-6397	Support for PC 6300 and Other AT&T PC Models	American Telephone/Telegraph PC Division	Plainfield, NJ
ATI Support BBS	(416)768-4591	Support for ATI Modems and Video Cards	ATI Technologies	Scarborough, Ontario
Audioophile Network	(818)988-0452	High-end Audio Components, Music, Video Reviews	Guy Hickey/Quatre Speakers	Van Nuys, CA
Automobile Consumer Services	(513)624-0552	New Car Pricing Reports - Used Car Value Reports	Automobile Consumer Services Inc.	Cincinnati, OH
BBS Press Service	(913)478-9239	Home of INFO-MAT Online Weekly PC News Magazine	Alan Bechtold/BBS Press Service	Topeka, KS
BellSouth's TUG Gateway	(404)594-3964	Transnet Universal Gateway - Atlanta Journal-Constitution	BellSouth	Atlanta, GA
Best Friends BBS	(714)632-5902	DLX Multiline Chat/Match Social/Sexual	Ann and Joe Wiseman	Fountain Valley, CA
Big Peach BBS	(404)448-6650	Home of Automenu and Treeview Software	Marshall Magee/Magee Enterprises	Norcross, GA
Big Sky Telegraph	(406)683-7680	Education/Econ Development Info to Montana rural Communities	Montanna Rural Education Network	Dillon, MT
Bird Info Network	(303)423-9775	Breeding, Falsing, Taming, Exotic Birds	Terry Rine/Dave McClaugage	Anvada, CO
Bit Bucket Software BBS 104/501	(303)693-4317	Home of BinkleyTerm Mail Software	Bob Hartman	Aurora, CO
BMUG BBS	(415)849-2884	Support for Macintosh owners - files - conferences.	Berkeley Macintosh Users Group	Berkeley, CA
Boardwatch Magazine Online Info	(303)973-4222	Distribution Service for USA Today/Boardwatch/Closing NYSE	Boardwatch Magazine	Littleton, CO
Book BBS	(215)657-8130	Information on 2000 Computer Books - 800 order number	Business & Computer Book Store	Willow Grove, PA
Bruce's Bar & Grill	(203)236-3761	24-line Social System - Chat - Games - Downloads	Bruce Lomasky	West Hartford, CT
Bucks Telematics 273/201	(215)493-5242	Local, National, International Message Conferences	Richard Press	Yardley, PA
C.A.R.L. Library Service	(303)863-1350	Citations to 2 Million Texts in Colorado Library System FREE	Colorado Alliance of Research Libraries	Denver, CO
Cape Cod Bungalow 101/870	(508)759-1188	Multiline Service - Shopping Mail - Games - Tourist Info	Crawford Communications/Daniel Crawford	Cape Cod, MA
Capital PC User's Group BBS	(703)750-7809	One of the oldest PC User's Groups - 5500 members	Capital PC Users Group/Wes Merchant	Rockville, MD
Cattle Tabby 107/412	(201)988-0708	Home of TABBY Fidonet Interface Program for Apple Macintosh	Michael E. Connick	Bradley Beach, NJ
Census Bureau Office Automation	(301)763-4576	Microcomputers and Office Automation	US Dept. of Commerce/Nevins Frankel	Suitland, MD
Census Bureau Personnel Division	(301)763-4574	Employment Opportunities Within the Census Bureau	US Dept. of Commerce/Nevins Frankel	Suitland, MD
Channel 1	(617)354-8873	45-line PCBoard System - 3.7 GB Files - 250 Msg Conferences	Brian Miller/Tess Heder	Cambridge, MA
Chicago SysLink	(312)622-4442	Special Interest Areas for Ferret/Pet Owners.TRS80/Aviation	George Matyaszek	Chicago, IL
chinet	(312)283-0559	Unix System offering Internet Mail	Randy Sues	Chicago, IL
Classi Computer Fieds	(317)359-5199	Online System for Classified Advertisements	Steve Edsall/Trader Newspaper	Indianapolis, IN
Clean Air BBS	(408)298-4277	Environmental Health/Cigarette Smoking Topics	American Lung Association/Sheila Blash	San Jose, CA
Cleveland Freenet	(216)368-3888	Cleveland City Information/Ohio Governor's Office Online	Case Western University/AT&T/Ohio Bell	Cleveland, OH
CoxoNet	(619)456-0815	CocoNet Support/Demo - Hires Graphics BBS for Unix Systems	Brian and Patricia Dear	La Jolla, CA
Comm-Post, The 104/666	(303)534-4648	Astronomy - 725+ MB of Files	Brian Barlee	Denver, CO
Compact Audio Disk Exchange	(415)824-7803	Buy/Sell/Trade Compact Audio Disks Online	Wayne Gregori	San Francisco, CA
CompuCom Customer Support BBS	(408)738-4990	Support for CompuComm SpeedModem - 9600 bps - \$279	CompuCom	Sunnyvale, CA
Computer Business Services	(714)396-0014	Computer Columnist John C. Dvorak's office BBS	John C. Dvorak and Nick Anis Jr.	Diamond Bar, CA
Computer Garden	(301)546-1508	Treasure Hunting - Metal Detectors - Online Catalog	Millard P. Webster	Salisbury, MD
Computerized Bulletin Board Sys	(708)849-1132	First Electronic Bulletin Board - Creator of XMODEM Protocol	Ward Christensen	Chicago, IL
Computing Canada Online	(416)497-5263	Adjunct to Excellent Canadian PC Newspaper	Computing Canada Newspaper	Willowdale, Ontario
Corporate Data Exchange (CDX)	(609)683-4422	PR Newswire/ Business Wire. Logon: hello user.cdx	LaFountain Research Corp/Tad LaFountain	Princeton, NJ
Crosstalk Communications BBS	(404)740-8428	Product Support for Crosstalk for Windows/MK4/KVI	Digital Communications Associates	Roswell, GA
CTC IEEE Employment Database	(508)283-3857	Online Database of 20,000 Resumes for Engineering	Career Technologies Corporation	Andover, MA
Cul-de-Sac Bar & Grill	(508)429-1784	Multiline Service - Ham Radio - Humor - TDBS Applications	Pete White	Holliston, MA
CyLink	(719)520-5000	Online Chat/Multiplayer Interactive Games - 12 lines	Klaus Dimmler	Colorado Springs, CO
Dante Project BBS	(603)643-6310	Commentary/Research on Dante's Divina Comedia	Dartmouth College	Hanover, NH
Dark Side of the Moon	(408)245-7726	Home of WAFFLE, Unix UUCP BBS Software for DOS and Unix	Thomson E. Dell/Darkside International	Mountain View, CA
Data Core BBS	(213)447-8600	25 line Major BBS	Matthew Schoen/Delta Enterprises	Los Angeles, CA
Data Point	(601)442-8777	Online Publications - Excellent TBSB System	Gary Funk	Fayetteville, AR

DataLink RBBS System	(214)394-7438	Weather Satellite Imaging, NOAA Satellite Tracking-AMSAT-NA	Dallas Remote Imaging Group/Jeff Wallace	Carrollton, TX
Daydreamer BBS	(866-2-3122452)	Ten Line Remote Access BBS - Largest BBS in Taiwan	Allen Wu	Taipei, Taiwan
Denver Deaf-Net	(303)989-9245	Hearing Impaired/Computing	David Sheneman	Lakewood, CO
Desert Storm Message Center	(800)955-1249	Military Affiliated Radio Service - Msgs to Desert Storm	Fort Lewis MARS Station/Jeff Lewis	Fort Lewis, WA
DigiBoard Support BBS	(612)922-5604	Multipoint Serial Cards	DigiBoard Incorporated	St. Louis Park, MN
DragonNet 386/451	(409)765-5459	Home of XRS Offline Mail Reader	Robert Michal/Dragon Profit Systems	Galveston Island, TX
East Bay X-Change 372/888	(803)556-7485	New York Emulation of THE WELL - Unix CAUCUS Conferencing	Mike Rattledge	McClintanville, SC
Echo	(212)989-8411	Economic Statistics/GNIP/CEI/Employment, Trade Opportunities	Stacy Horn/Echo Communications Group	New York, NY
Economic Bulletin Board	(202)377-3870	40 Online Game Doors - Graphic Files	US Department of Commerce	Springfield, VA
Electric Dialectic BBS	(708)705-6774	Variety of Petroleum/Coal/Electricity Energy Statistics	Bruce Johnson	Paikine, IL
Energy Info Admin E-Publications	(202)586-8658	Home of The Bread Board System (TBBS) BBS Software	US Department of Energy	Washington, D.C.
eSoft Product Support BBS	(303)899-8222	32 Line Digitized Graphics Image Library - Adult GIF files	Phil Becker/leSoft Inc.	Aurora, CO
Event Horizons	(503)697-5100	12,500 Amiga Files - USA Today - Closing NYSE Stocks	Jim Maxey	Lake Oswego, OR
Exactus Information Service	(707)524-2548	Largest Gay/B/Lesbian Multiline BBS in Houston	David Salas/Robert Cohen	Santa Rosa, CA
Exchange BBS, The	(713)521-2191	Largest BBS in US - 166 Lines - 70,000 files - 6 Gigabytes	James Craig/John Fields	Houston, TX
EXEC-PC	(414)789-4210	Interlink Netmail National Host - Multiline PCBoard System	Bob Mahoney	Shorewood, WI
Executive Network	(914)867-4587	22 line Oracom - Gay Issues - Popular Chat System	Andy Keeves	Mt. Vernon, NY
Eye Contact BBS	(415)255-5972	Large Western Canada Galactoon Info System	Bill Montgomery	Mill Valley, CA
Farwest BBS	(804)381-3934	Equipment Authorization Status Advisory Service	Ren L'Ecuier	Victoria, BC
FCC Public Access Link	(301)725-1072	Federal Job Opportunity Lists available online	Federal Communications Commission	Columbia, MD
Federal Job Information Center	(313)228-4423	Info on Federal Libraries - Excerpts Library of Congress News	US Office of Personnel Management	Detroit, MI
FEDLINK ALIX II	(202)707-9656	The First Fido BBS and home of Fido BBS 12s	Federal Library Information Network	Washington, D.C.
Fido Software BBS 1:125/111	(415)863-2739	Fidonet Technical Information for Holland	Tom Jennings	San Francisco, CA
FOG Tech Stand	(31-80-735900)	Gay Community BBS - AIDS Info - Desktop Publishing - MACs	J.J. van der Maas	Utrecht, Holland
FOG City BBS 125/10	(415)863-9697	Newspaper BBS, Wordnet, Newswire, List of MA Libraries	Bill Essex	San Francisco, CA
Fred the Computer	(508)872-8461	Outstanding IBM Shareware on a small system	Middlesex News	Framingham, MA
GDP Technologies	(303)673-9470	Support for MAGNUM BBS - OS/2 BBS Software - up to 8 lines	Tom Getty's	Lafayette, CO
Gilmore Systems BBS	(805)582-9308	Gay and Lesbian Information Bureau - 11 Lines - 9600 bps	Chuck Gilmore	Simi Valley, CA
GLIB	(703)578-4542	Ecological and Peace Issues - Disarmament/Toxics/Wildlife	Dick Dillman/Greenpeace	Arlington, VA
Greenpeace Environet	(415)512-9108	Home of GT Power Communications Software	Paul Meiners/P&M Software	Houston, TX
GT PowerComm BBS	(713)772-2090	Database of Hay/Straw Suppliers and Buyers	Purdue Univ. Agricultural Computer Net	Norcross, GA
Hay Locator	(317)494-6843	Customer Support Line for Hayes Customers, V-series/Ultra	Mark Miller	Philadelphia, PA
Hayes Advanced Systems Support	(800)874-2937	Reptile and Amphibian Studies - Poison Snakes/Toads/Fish	Lee Winsor	New Hartford, CT
Herpet/Satronics TBBS	(215)698-1905	MS Windows and OS/2 Files our specialty	Harvard University	Cambridge, MA
HH Info-Net BBS	(203)246-3747	Harvard On-Line Library Information System - 7E1 VT100	IBM National Support Center	Atlanta, GA
HOLLIS	(617)495-9500	Paradise/Veritcom Graphics Products - .GIFs	Western Digital	Mountain View, CA
IBM National Support Center BBS	(404)835-5300	Telephone Sales Trade Magazine Online Service	Harry Newton Publications	New York, NY
Imaging GraphicsLine BBS	(415)988-1834	Excellent list of Atlanta BBS systems online	Rodney Aloia	Marletta, GA
Inbound/Outbound/Taleconnect	(212)989-4875	8 line Galactoon System - Many good text publications	Daniel Diachun	Lexington, KY
Index Systems	(404)924-8414	Demo BBS for InfoHost BBS Software - Multiline - Database	A-Comm Electronics Inc.	Hasbrough Heights, NJ
Infinity World	(606)271-6568	Support for Intel PC Products - Inboard 386/AboveBoard 288	Intel Corporation CEO Division	Hillsborough, OR
InfoHost Demo BBS	(201)288-7792	32 Lines - 100 Directories - Good Shareware Catalog 3.2 GB	Mike Sussell	New York, NY
Intel PCEO Support BBS	(503)645-6275	Online Investment/Stock Market Information/Tech Analysis	Don Shepherdson	Bellevue, WA
Invention Factory	(212)431-1194	Navy Judge Advocate General's Information Network	US Dept. of Navy / Chris Buechler	Arlington, VA
Investor's Online Data	(208)285-5359	Online Hardware Order - Catalog - 1.1 GB Files - Quizzes	JDR Microdevices	San Jose, CA
JAG-NET	(703)325-0748	7E1 Pilots Weather Service - NWS Data and Maps	Jeppeson Data Plan Inc.	Los Gatos, CA
JDR Microdevices BBS	(408)559-0253	Online Job Listings - 2186 Technical Pos. - 10,000 Corps.	Alpha Systems Inc./Bill Griffin	Roswell, GA
JEPPLINK	(800)767-7000	Colorful Spiffire BBS in Puerto Rico	Jose Frías	Lajas, PR
JOBS	(404)992-8937	Prime Rate-Fed Funds-T-Bill-Discount Rate-Economic Data	Federal Reserve Bank of Minneapolis	Minneapolis, MN
Joe's Place BBS 1:387/15.6	(809)254-3568	400 MB Books, Writers Area - TRS 80 Support	Jim and Karen Burt	Boulder, CO
KIMBERLY BBS	(612)340-2489	Support for LANtastic local area network	Artsoft Inc.	Tucson, AZ
King's Market BBS 104/115	(303)665-6091	Home of GENESIS BBS Software - Multinode LANable.	Carter Downer	Hannibal, NY
LANtastic BBS	(602)293-8065	Home of UFGATE - Software to connect PCs to UUCP/Usenet	Tim Pozar	San Francisco, CA
Late Night BBS	(315)592-7300	Support for Leading Edge Computer Owners	Leading Edge Computer	Westborough, MA
Late Night Software 124/555	(415)695-0769	Legal Issues/Forms - Law BBS List	Bill Sordicelli	Spokane, WA
Leading Edge Auto Info Line	(508)836-3967	Libraries of Univ. of Minnesota Integrated Net Access7E1VT100	University of Minnesota	Twin Cities, MN
LegalEase	(609)328-3238			
LUMINA	(612)628-2208			

BOARDWATCH MAGAZINE

NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - MAY 1991

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
Maxi-Micro Ticker/Screen	(212)809-1160	2000 Closing Stock Quotes/Market Research/Order Entry	Max Ule & Company	New York, NY
Maxtor Technical Support BBS	(303)678-2020	Installation/Troubleshooting/Support for Maxtor Hard Disks	Maxtor Corp./Chris Bowers	Longmont, CO
McAfee Associates BBS	(408)988-4004	Computer Virus Information - VIRUSCAN and CLEANUP Programs	John McAfee/CVIA	San Jose, CA
METRO Online Entertainment	(212)831-9280	32 line DLX with City Guide/Ski Database - Matchmaker - Chat	Bruce Kamm/Metro Online Services	New York City, NY
Micro Foundry, The	(415)598-0398	2.2 GB Downloads - Your Online Software Source - Boardwatch	Thomas Nelson/Clockwork Software	San Jose, CA
Micro Message Service	(919)779-8674	USA Today/Boxoffice Magazine - Large Download Area	Mike Stroud	Raleigh, NC
Micro Tech BBS	(314)334-3339	Support for OSIRIS Multiline BBS Software - IRIS Mail	Micro Tech	Cape Girardeau, MO
Microlink B	(303)972-9600	1 GigaByte of IBM Software - Multiline - USA Today News	Girard Westerberg	Littleton, CO
Microform Technical Support BBS	(208)849-8836	Support for Popular R:Base Relational Data Base System	Microform Corporation	Redmond, WA
Microsoft Product Support BBS	(208)846-9145	Word/Works/Multiplan/Flight Simulator Application Notes	Microsoft Corp./Scott J. Honaker	Bellevue, WA
Microsystems Software Inc.	(508)876-8009	HandiWare Software for Handicapped - CodeRunner C Utilities	MSI - Reed Lewis	Framingham, MA
Minnesota Spaceenet	(612)920-5588	Minnesota Space Frontier Society - NASA News	Ben Husset	Minneapolis, MN
NBEMR Ham BBS	(614)895-2553	login:hbbs HAM Radio/AMSAT Unix System - Satellite/Packet	Gary Sanders	Westerville, OH
NARDAC BBS	(804)445-1827	Zenith Computer Support - List of Federal Micro User Groups	Navy Regional Data Automation Center	NAS Norfolk, VA
NASA Headquarters Info Tech	(202)453-9008	Shareware and Technical Info for NASA PC users.	National Aeronautical and Space Admin.	Washington, DC
NASA SpaceLink	(205)895-0028	NASA Educational Affairs Div. - Flight Data/Space History	Marshall Space Flight Center	Huntsville, AL
Nashville Exchange	(615)383-0727	8 line TBBS - Games/TDBS Software Development	Ben Cunningham	Nashville, TN
National Agricultural Library	(301)344-3510	Agricultural Info/Research Resources	US Department of Agriculture	Beltsville, MD
National Genealogical BBS	(703)528-2812	Family History - Genealogical Research - Gravestone Haunting	National Genealogical Society	Arlington, VA
Nautilus BBS	(318)385-7831	32 Line TBBS with 5 GB of Files on 80486, CD/WORMS	Nautilus Communications	Iola, KS
NAVWESA	(202)433-3839	Naval Weapons Engineering Support	Dept. of Navy / Bill Walsh	Washington, D.C.
Network World Bulletin Board	(508)620-1178	LAN and WAN Issues and Technology	Network World Magazine/CW Communications	Framingham, MA
Neuropsychology Bound 157/3	(216)856-1431	Support Groups for Disabled/Physically Impaired	Butch Walker	Rocky River, OH
NIST ACTS	(303)494-1775	Automated Computer Telephone Service - Sync PC to NBS Time	Nat. Institute for Standards/Technology	Boulder, CO
NIST Computer Security	(301)948-5717	Computer Security and Virus Protection Issues	Nat. Institute for Standards/Technology	Gaithersburg, MD
NOAA Space Environment Lab	(303)497-5042	Solar Flare/Geomagnetic Data Online	National Oceanographic/Atmospheric Admin	Boulder, CO
NoGate Consulting	(616)530-3392	Home of PAK archive utility	Mike Neuhaus Gus Smedstad	Grand Rapids, MI
NuMISnet	(301)498-8205	Collecting of Coins, Medals, and Exonumia	The Mitchell Group	Laurel, MD
OASIS BBS	(404)827-2682	Home of Atlanta Bulletin Board List - ABBL	Robert Orr/Online Atlanta Society	Decatur, GA
Occupational Health/Safety BBS	(212)385-2034	Job Safety Issues for Artists, Musicians, Entertainers	Mike McCann/Center for Safety in Arts	New York, NY
Ocysey	(818)358-8968	Adult Multiline Chat System - Games - Magazines - Downloads	Michael Allen	Monrovia, CA
OERI BBS	(800)222-4922	Educational Statistics and Data - Performance Stats -	US Department of Education	Washington, D.C.
Old Colorado City Communications	(719)632-4111	Political Discussions - Unix UUCP Public Access - Multiline	Dave Hughes	Colorado Springs, CO
Online Now	(807)345-5522	5 CD-ROMS plus 3MB New Software per Week	Gary Walsh/Tom Haavisto	Thunder Bay, Ontario
Online Sports	(716)688-8537	Large base of Sports Stats for Pro Gamblers	Terry McCraith	Williamsport, NY
Online With Hayes	(404)446-8836	Hayes Public Bulletin Board - Conferences/SIGS/Support	Hayes Microcomputer Products	Norcross, GA
Oracle PC	6108 260-8222	South Australian TBBS Multiline System	Don Crago	Pooraka South Australia
Oracom Support BBS	(619)346-1608	Sales and Support for Oracom Multiline BBS Software	Surf Computer Services	Rancho Mirage, CA
Osprey's Nest	(301)989-9036	Birdwatching, Bird feeding, Naturalist/Ecology Issues	Fran and Norm Saunders	Colesville, MD
P.D.S.L.O. BBS	(516)938-6722	Home of THE LIST National BBS List	James Toro	Hicksville, NY
PacComm BBS	(813)874-3078	Packet Radio Equipment Supplier - TNC/PSK Modems	Gwyn Reedy/PacComm Inc.	Tampa, FL
PC Ohio	(216)381-3920	Shareware library with 100% USR HST access - 5 years up	Norm Henke	Cleveland, OH
PHYSICS Forum BBS	(413)545-1959	Physics and Astronomical Sciences	Univ. of Mass. Dept. of Physics/Astronomy	Amherst, MA
Pinecliff BBS 104/28	(303)642-7463	Large Shareware Library/Economail Conferences since 1985	Craig Baker	Pinecliffe, CO
PKWare BBS	(414)354-8670	Home of PKZIP 1.10 Compression Utility	Phil Katz/PKWare Incorporated	Glendale, WI
Pleasure Dome	(804)490-5878	Sexually Explicit Fantasy Chat System - Adults only	Tom Terrific	Tidewater, VA
Popular Mechanics Online BBS	(212)582-8369	Automotive, Home/Shop, Electronics/Photography, Science	Popular Mechanics Magazine	New York, NY
PowerNet	(407)834-3326	Commercial Distributor for REMOTE ACCESS BBS software.	Richard T. Brannon	Altamonte Springs, FL
Practical Peripherals BBS	(818)708-2467	Support BBS for Practical Peripherals Modems	Practical Peripherals	West Lake Village, CA
ProComm Support BBS	(314)474-8477	Home of ProComm 2.4.3 and ProComm Plus Comm Prgrams	Thomas Smith/DataStorm Technologies Inc.	Columbia, MO
Public Brand Software BBS	(317)856-2087	Commercial Shareware Vendor	Public Brand Software	Indianapolis, IN
Qualitas, Inc. BBS	(301)907-8030	386MAX and BlueMAX Memory Management Software Support	Qualitas Inc.	Bethesda, MD

Radio Electronics BBS	(516)293-2283	Radio Electronics Magazine Online Adjunct	Gemsback Publications	Farmingdale, NY
Random Access Information Svc.	(503)761-8100	10500 IBM/AMIGA Files - 3000 MaxiPc Graphics	Janice Stevens	Portland, OR
Remote Access HQ 3:59/625	61 9 389 8048	Home of Remote Access BBS Software	Andrew Milner/Continental Software	Perth, Western Australia
RGB Computing	(519)824-3997	Multiline Information Service/PC Sales/Large File Selection.	Ronald Spencer - RGB Computing	Guelph, Ontario
Rose Media	(416)733-2787	Excellent Canadian PC Board System-Publications/Conferences	Vc Kass	Willowdale, Ontario
Salt Air BBS	(216)726-0730	Large ML PCBoard run by Husband and Wife - NFL/Trade Wars	Rusty and Edwina Hardenburgh	Boardman, OH
Science Resource Studies BBS	(801)261-8976	Home of PCBoard BBS Software - National List of PCB Sys	Clark Development Company/David Terry	Murray, UT
Scotter's Scientific Exchange	(202)834-1764	Federal R&D Budget - Technical Labor Market Statistics	National Science Foundation	Washington, D.C.
SEABOARD	(215)657-5588	Biotechnology/Chemistry/Physics/Astronomy/Space Sciences	Brian Moldover	Willow Grove, PA
Seagate Technical Support BBS	(201)473-1991	Support system for ARC, SEADOG, and AXE software.	System Enhancement Associates	Wayne, NJ
Searchlight BBS	(408)438-8771	Installation and Specifications for Hard Drive Models	Seagate/Shelley Tolch	Scotts Valley, CA
SemWare Support BBS	(516)889-2588	Support system for Searchlight BBS Software	Searchlight Software	Stony Brook, NY
Short Line 104/36	(404)841-8968	Home of QEdit - A Super Shareware Text Editor	Sammy Mitchell/SemWare Software Products	Marletta, GA
Sistema Profesional Informacion	(303)778-7312	Varied Subjects, FidoNet, BinkleyTerm	Allan Applegate	Denver, CO
SNAPU BBS	525 590-5988	Largest BBS in Mexico - Spanish Language TBBS	Tecnologia Uno Cero S.A. de C.V.	Mexico City
Society for Technical Comm. BBS	(202)547-8238	Advice for Government Whistle Blowers - Fouled DOD Programs	Greg Williams/Project on Military Proc.	Washington D.C.
Sonshine Express BBS	(703)522-3299	STC Job Service, Freelance Registry - Technical Writers	Society for Technical Communication	Washington, D.C.
Sound Advice BBS	(415)851-2440	Family Oriented Christian BBS	Anton Johnson	Fremont, CA
Southern Arizona Birding BBS	(816)438-4516	Twenty Line PCBoard with 2 Gigabytes Storage - HST Modems	Roy Timberman	Gladstone, MO
Star-Link Network BBS	(602)881-4280	Rare Bird Alerts Online - Birdwatching in Southwest	Chuck and Sharon Williamson	Tucson, AZ
State and Local Emergency Mgmt.	(718)972-6099	9-nodes, 2.1GB, link, 75,000 programs	Michael Keylin	Brooklyn, NY
Stillwaters BBS	(202)846-2887	Hazardous Materials/National Dam Watch/Emergency Info	Federal Emergency Management Agency	Washington, D.C.
Talk Channel	(708)403-2826	Home of Stillwaters Chicagoland BBS List - over 500 systems	Colby Jordan (BBS) Peter Anvin (list)	Orland Park, IL
TAXACOM	(818)506-0620	DLX-Based Multiline Chat/Talk Service - Sexual Orientation	Gary Clarkson	North Hollywood, CA
TEAMATE Unix Bulletin Board	(716)898-7581	Botany, Herbaria, FLORA ONLINE Newsletter, Latin Translation	Clinton Herbarium, Buffalo Museum	Buffalo, NY
Telegraphia	(213)318-5302	Demo/Support for TEAMATE BBS Software for Unix	Bob Baskerville/MMB Development Corp.	Manhattan Beach, CA
Telx Support BBS	(503)821-3748	Home of ZModem File Transfer Protocol/YModem/YAM	Chuck Forsberg/Omen Technology Incorp.	Portland, OR
That Old Frog's Swamp	(415)364-8315	DBMS/Dr. Dobbs Journal Magazine Online Service	M&T Publishing	Redwood City, CA
The Back Room	(715)382-3895	Support Service for Talk Communications Software	Colin Sampaleanu/Exis Incorporated	West Hill, Ontario
The Business BBS	(416)439-8293	Zen Buddhist Monk/PC Consultant	Ryugen Fisher/The Old Frog	Rhineland, WI
The Ledge PCBoard	(718)849-1614	America's Largest Exclusively Gay DB - Home of Gaycomm	Jim Appleby	Richmond Hill, NY
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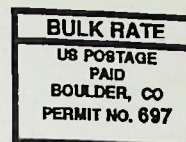
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